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LEUCOPLAKIA BUCCALIS ET LINGUALIS.*

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The interest attached to a study of leucoplakia lies in the fact that the essentials leading to a practical understanding of the subject have been for many years, and still are, unsettled. In the Transactions of this Association there will be found three papers dealing with the subject. The paper by Ingals, in 1885, was very comprehensive. He stated that he had found about fifty articles on the subject, and presented an excellent bibliography up to date. Glasgow, in 1887, reported a case in the proceedings of this association. The diagnosis in this report is open to question. Cobb's paper, in 1902, presented a most excellent study of histological findings. His bibliography supplemented that of Ingals'.

The subject is no less interesting because of the numerous literature and the varied opinions that have been presented. Disputed points as to etiology and the question of malignancy, as also the unsatisfactory results of treatment, are further evidences of the unsettled state of our knowledge.

This essay is intended to review the bibliography from the date of Cobb's paper, in 1902, to the present time, and to offer a critical analysis of opposing views to clarify somewhat if possible the atmosphere. For this purpose the following case is used as a text:

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Mr. R. T., has been under observation more or less continuously for a period of seven years. When he first presented himself he was 63 years of age, and with the exception of asthma and an attack of "brain fever," gave no history of previous illness. He did not use tobacco, and denied syphilis. One brother had died, presumably of cancer of the stomach.

Approximately twelve months before his application for treatment and immediately following the extraction of a tooth, he first noticed a feeling of soreness in his mouth. This was followed by the appearance of white ulcerations attended with pain.

Upon examination, the mucous membrane on the right side of the mouth and that covering the gums of the lower jaw, where there were no teeth, was found covered with plaques of irregular outline, thick in some portions and thin in others, presenting a bluish white or yellowish white color, with superficial excoriations seen especially at the margins. (Figure 1.)

The picture was that of leucoplakia, although less typical than is often seen, and an attempt was made to explain its irregularities by bacteriological examination. This proved unsatisfactory, in that one bacteriologist was able to demonstrate among other bacteria the fusiform bacilli and the spirilla which led him to report Vincent's Angina, while the other found an abundant flora of micro-organisms growing, as he believed, in soil of lowered resistance.

The patient remained under observation nearly two years, but was not improved by treatment. He then consulted a surgeon, who later reported the following:

"A nodular, spongy, indurated mass was found involving the alveolar process at the right angle of the jaw. The mucous membrane of the right cheek, the right pillars, the right border of the tongue and the mucous membrane of the alveolar process of the right inferior maxilla were covered with extensive patches of leucoplakia. The glands of the neck were not enlarged. A microscopic examination resulted in the diagnosis of carcinoma, although the details of this examination were not noted.

Some improvement took place under potassium iodid and tonics, in addition to local applications of the Paquelin cautery and daily irrigations of potassium permanganate solutions. This improvement did not continue in spite of repeated cauterizations and therefore, after ligation of the right common carotid, the right half of the inferior maxilla was resected. The growth had extended into the muscles in the angle of the jaw, which were removed, together with the parotid gland. Dissection of the growth after operation


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showed a fungoid mass near the angle of the jaw about the size of an egg. Recovery was prompt, and upon his discharge from the hospital there were no remaining areas of leucoplakia."

The patient now remained well for about three years, at the end of which time he noticed a return of the white spots with tumor. Examination at this time showed a papilloma springing from the right angle of the lower and upper lip close to, but not involving, the cutaneous junction. Within the mouth the mucous membrane of the right side was covered with a large papillomatous mass, the surface of which presented thickened plaques of leucoplakia, which spread gradually to the surrounding normal mucous membrane. (Figure 2.)

Fig. 3. Cauliflower like growth showing overgrowth of epithelium, but no atypical proliferation or invasion of the submucosa.

The growth upon the lip was removed and sectioned, Dr. Hillkowitz reporting as follows:

"Section from the growth in the buccal cavity of Mr. T., reveals an overgrowth of epithelium which is enormously thickened throughout all its layers. The horny layer is over-developed and dips down between the numerous infoldings of the epithelium which grows in papillary form. The basal layer is well defined and there is no evidence of atypical proliferation nor other signs of malignancy. The submucous membrane is quite vascular but presents no other abnormal ties. The appearance of the neoplasm under low magnification is like that of a cauliflower. Pathologic diagnosis, papilloma." (Figures 3 and 4.)

It is one year since the tumor from the lip was removed. There is no evidence of recurrence. The tumor in the mouth is under treatment by fulguration which up to the present time has diminished the size of the growth as well as the extent of the leucoplakia

but, owing to the pain connected with the treatment, the patient declines to continue.

The above history relates clinically and pathologically the various phases through which at some time or other cases of this kind pass.

Names, Definitions and Varieties: The term leucoplakia, although a convenient one, is unfortunate in that it is rather generic than specific.

Goodale speaks of it as a term applicable to all white dyskeratoses.

Gaucher defines it as white plaques, varying in size, somewhat indurated superficially and occasionally accompanied by fissures or ulcerations.

Joseph says leucoplakia is a primary lesion of the tongue and mucous membrane of the cheek, upon which appear spontaneous blue-white spots in place of the normal mucous membrane.

According to Shoemaker, leucoplakia appears to be essentially a chronic inflammation of the mucous membrane with infiltration, localized cellular hyperplasia and keratinization of the epithelial layer.

Marie speaks of leucoplakia as leucokeratosis, that is the transformation of a squamous epithelium into a thick, horny epidermis.

Castells maintains that there are at least two varieties of leucoplakia other than those dependent upon syphilis, which are known as Wilson's lichen, and psoriasis buccalis.

Mollenes points out the following varieties: Idiopathic essential leucokeratoses, syphilitic leucokeratoses, arthritic leucokeratoses, leucokeratoses of smokers, of glass-blowers, and of those wearing dental plates, etc., mixed leucokeratoses.

Sabouraud describes two forms, the para-syphilitic and the genuine, the latter being much less frequent.

Lacapere speaks of a form due to hereditary syphilis, which may be distinguished by certain characteristics, namely, the entire appearance of the lesion is suggestive of a very old affection as shown by the gray color due to the desquamation of the epithelium; the plaques themselves are retracted and compressed, like old cicatricies.

Among other names by which this disease has been described are *psoriasis buccalis*, introduced in 1868, by Bazin; *plaque de fumeurs*, introduced in 1858, by Buzenet; *tylosis*, *keratosis lingualis* and *ichthyosis*; Butlin prefers the term *leucoma*, as does Beffel who considers it not simply a chronic inflammatory process but a heteroplastic one.

Leucoplakia has been described involving other organs besides the cheeks and tongue.

A case reported by Farrel, involved the pillars, the tonsil, the epiglottis and the arytenoids. In this case the diagnosis was doubtful but Bosworth identified it as leucoplakia.

Barker found that it occurred on the prepuce, anus and other regions that do not come in contact with tobacco or smoke.

Butlin reported its occurrence on the vulva, and Jayle and Bender found cases of leucoplakia involving the vulva, vagina and uterus. A case of leucoplakia of the uterus was reported by Sweeney and Löhnberg found carcinoma with leucoplakia of that portion of the female genitals covered with mucous membrane.

Lecene studied a case of leucoplakia involving the pelvis of the kidney.

Etiology: In some individuals the mucous membrane of the mouth is more susceptible to exposure and irritants than in others, which explains its more frequent occurrence in these cases. This excessive vulnerability of the buccal and lingual mucosa has been the cause of much confusion in the etiology, white patches being observed in every instance, so that syphilitic scars, chronic superficial glossitis or any of the keratoses mentioned may be held responsible.

The two etiological factors most frequently discussed in their relation to this disease are syphilis and tobacco. Great difference of opinion prevails, based, it would appear, upon individual experience.

Syphilis: Kopp states that leucoplakia is a pathognomonic sign of syphilis. Gaucher believes leucoplakia is always syphilitic.

Landouzy gives his opinion as follows:

First, that the indispensable factor is syphilis.

Second, that the use of tobacco is a valuable contributing agency in the production of leucoplakia but is not essential.

He has seen many cases where the history has been negative to the use of tobacco, but he has yet to see one where syphilis did not play the most important part.

Kaposi, quoted by Lublinski, states that "keratosis mucosae" is the result of syphilis. Merklen ascribes it to hereditary syphilis, in children.

Tobacco: Joseph gives this as the most important cause. He states that he never saw a case where the patient had not been a heavy smoker. He believes it has nothing to do with syphilis, except that the latter, as other local lesions, offers a predisposing cause for the development of leucoplakia in smokers.

Between these two views we find many who ascribe the affection to both syphilis and tobacco, but who find one rather more important than the other.

Dubeville believes leucoplakia is always associated with syphilis, and almost always with the use of tobacco.

Bockart speaks of the disease as para-syphilitic, and says that both syphilis and tobacco are equally important in its production. He has never seen leucoplakia in syphilitics who have not been smokers, nor in smokers who have not had syphilis.

Erb assumes some cases to have been syphilitic. He believes that both syphilis and smoking are causative factors, smoking causing it alone when excessive, but in the presence of syphilis the moderate use of tobacco may produce it.

Butlin believes tobacco and syphilis as well as alcohol are only exciting causes, the predisposing cause being found in a sensitive mucous membrane. In a subsequent paper he reported cases involving the vulva, from which he concluded that "there is reason to believe that the disease here is the same as in the mouth, and if so the influence of tobacco and alcoholics in its production loses some of its importance."

Goodale ascribes the disease to syphilis and smoking, the use of the latter being more important if syphilis exists.

Guerini states that when leucoplakia is due to syphilis it occurs on the tongue, when due to tobacco it occurs on the lips or cheeks.

Hartzell states that smoking and syphilis are not so frequently the cause as is believed. He considers it in the beginning an inflammatory disease of some special character, for he finds it at other mucous surfaces adjoining the skin.

Toussiant describes it as due to trophic nerve lesions, being "pretabetique," because of the symmetry of the lesion. This naturally pre-supposes a para-syphilitic affection.

Queyrat and Bouttier show that it undoubtedly exists without the pre-existence of syphilis, by the report of a case occurring in the presence of a chancre of the lip.

Those who believe tobacco an important cause, find that it occurs in smokers, although instances in which the disease is produced by the contact of tobacco against the mucous membrane, as in chewing, are recorded.

Lieven, however, believes that the reason it occurs in smokers is not because of the tobacco, but because the suction during the act of smoking draws the mucous membrane of the cheek between the

teeth. He, therefore, lays stress upon this mechanical act as the underlying cause.

Pathology: Although, as Cobb states, much had been written upon this subject, not many had carefully studied microscopic conditions, nevertheless, since the appearance of his paper a great deal of space has been devoted to the histology of the affection.

The different phases of leucoplakia have been variously described.

Barker divides the pathology into three stages:

First Stage. In this there is a slight thickening of the epithelial covering of the papillae.

Second Stage. Here is found a greater thickening of the epithelium, the cells having undergone a horny change and an exudation of leucocytes being found in the papillary layer.

Third Stage. In this stage the plaques are very thick, the epithelium is more horny, the papillae having atrophied their place is taken by partly-organized inflammatory exudate, which means that the area involved has become the seat of a chronic superficial inflammation.

Gaucher's view agrees with Barker's. He states that anatomically leucoplakia is very similar to superficial sclerotic glossitis, the sclerosis being especially marked in the papillary layer. The original lesion is epithelial and consists of "cutization" of the mucosa.

The term "cutization" was also used by Lecene to characterize the changes that occurred in a case involving the pelvis of the kidney.

The term *tylosis* having been applied to cases of leucoplakia, Rosenheim made a comparative study of the histological changes in leucokeratosis buccalis as compared with tylosis of the palms and soles. He found the essential changes were very much alike, except that in leucoplakia the infiltration of corium with round cells was more marked and the tissue more embryonal in appearance.

Beffel considers leucoplakia a benign epithelial growth, which confines its operations externally to the basement membrane. As the disease progresses Beffel finds that it may and not infrequently does violate the basement membrane invading the underlying connective tissue, thus becoming an epithelioma.

Shoemaker states that in the last course of the disease papillomatous growths may develop from the affected locality, while Vilanova speaks of two forms of degeneration, one the papillomatous, which is benign, the other epitheliomatous, which is malignant.

The histological changes that occur early in the development of papillomatous growths are well illustrated in the accompanying

photomicrograph, taken from one of my cases. (Figure 3.) Dr. Hillkowitz describes the microscopic findings, as follows:

"The epithelium is considerably thickened, and there is a tendency to keratinization of the upper strata. The horny layer occasionally dips down in the stratum germinativum in the form of spherical masses. The epithelium shows invaginations along its surface, producing a wavy appearance and suggesting the beginning of papillomatous growth.

The papillae are long and narrow and heavily infiltrated with small round cells, which also invade the submucosa immediately adjacent to the epithelium, indicating inflammation of the papillae and neighboring region. The small round cells occasionally force their way to the surface, where there is a defect of the epithelial

Fig. 4. Same as figure 3 with higher magnification, showing keritinization of superficial strata.

lining. This is seen at the site of the invaginations above mentioned."

Frequency of Cancer: No one denies the development of malignant growths in connection with leucoplakia. Whether this invariably occurs in the course of time, or whether it is a direct consequence of leucoplakia or merely a coincidence are questions which have been and still are matters of dispute. The importance of this question cannot be over-estimated.

Klop states that the question of leucoplakia as a precancerous stage cannot at present with our knowledge of the genesis of cancer be answered with precision, nevertheless, as Joseph says, "this spector stands in the background of every case of leucoplakia." He believes we must always fear carcinoma. It may take from twenty

to thirty years to develop. Still this author believes we must not be too pessimistic.

Barnard states that a leucoplakia often degenerates into cancer, which seems to be its ultimate goal.

Morestin says that leucoplakia is always a prelude to cancer. When involving the tongue it has an especially gloomy outlook, because it degenerates into epithelioma more frequently, more constantly and earlier than do leucoplakias elsewhere.

Löhnberg quotes Jayle and Bender to the effect that every spot of leucoplakia is suspicious.

Mantilla believes leucoplakia and epithelioma must no longer be considered a coincidence. He gives a table of eleven observers, with 556 cases, in which 158, or 31 per cent, developed epithelioma.

The percentage of these occurrences, according to other authors, shows considerable variation.

Vanspek believes that epitheliomatous degeneration occurs in 22 per cent. of the cases.

Artelli finds it in at least 30 per cent., Marie in from 7 to 50 per cent., Guerini in 20 per cent.

Herzfeld finds 22 per cent. resulting in cancer, owing to the long continued leucoplakia which prepares the soil for the malignant growth.

Jayle and Bender give the percentage as high as fifty. They think leucoplakia offers most excellent opportunity for cancer.

Hartzell believes the number of cancers under-estimated, rather than over-estimated. On the other hand, Kopp makes the distinction that instead of being pre-cancerous, leucoplakia represents the first stage of true epithelioma, while Gusman says that no one can state with any degree of certainty that leucoplakia is a pre-cancerous stage of some definite pathologic entity, nor even that it is more prone to degenerate into epithelioma than any other place which has been the seat of a chronic, long-standing irritation.

Barker takes a most reasonable view of the situation. He says, "It is nearer the mark to say that in those who are predisposed to carcinoma by birth or surroundings, leucoplakia offers its most suitable soil." As to its being the direct cause of the cancer, he affirms that, "on the whole, it appears to me that the very pessimistic views held in some quarters, as to the inevitable transition of leucoplakia into carcinoma, have perhaps been overdone. It is a condition to be watched carefully and one which justly excites uneasiness but it is another thing to take it for granted that it is always the pre-

cursor of cancer, and to attack it at once by wide-reaching excision of the part itself and of the glands likely to be involved."

Pathological Manifestations Indicating Development of Carcinoma: Were it possible to determine early enough cellular changes leading to the development of cancer we might prevent its occurrence and, although the microscope has been our greatest aid in early diagnosis, we find that pathologists disagree as to the genesis of malignant growths. It would seem that the exact time of the development of cancer is uncertain and much confusion has arisen by the terms "pre-cancerous stage" and "malignant degeneration," the meaning of which has been handed down as matters of tradition giving rise to various views which still further add to the confusion.

The manner in which epitheliomata follow the presence of leucoplakia has been carefully studied by many authors. A few of

Fig. 5. Showing small round cell infiltration of the papillae and submucosa. In the center the round cells are seen pushing their way to the surface.

the most prevalent views are here presented with a critical analysis of the same, for which I am indebted to Dr. Philip Hillkowitz, of Denver.

Barker states that "under the horny layer the proliferation of the younger cells takes place, and if they cannot be thrown off they must, as it were, bury under the papillary stratum, and this is just what we see under the old white patch when under the horny covering a cancerous nodule is beginning to form."

Hillkowitz states that this hypothesis must be rejected on the ground, first, that the horny layer cannot hold the growing cells back. In the formation of papillomata, verrucae, condolymata, accuminata, etc., there is also proliferation of the epithelium which grows upward pushing the horny layer in front of them and form-

ing numerous folds on the surface as a result of the excessive growth. Second, mere proliferation of epithelium is not sufficient cause for the production of an epithelioma. Third, the consecutive tissue of the submucosa or the corium can certainly resist the invading epithelium much better than the horny layer.

Shoemaker says it is easy to see why there should be frequent developments of epithelioma. The pathological history of leucoplakia shows us a hyperkeratosis, with a downward growth of the rete-mucosa and an epithelial increase of the inter-papillary space, thus obliterating the papilla. This is a microscopic picture of tubular epithelioma with superficial degeneration due to the interference of the circulation.

The criticism here is that the obliteration of the papillae is not yet a sign of epithelioma, nor a predisposing factor. Injections of scarlet red into the skin of the ear of rabbits produces even a worse picture, one that is very similar to epithelioma, yet the destructive process is lacking.

Vilanova states there are essentially two ways in which an epithelioma may develop from leucoplakia.

First, the most frequent way is one in which there is a progressing desquamation and dekeratinization of cells and a subsequent "epitheliazation" of ulcerations and fissures at the points of such dekeratinization.

Second, the one where the epithelioma develops directly from "epidermic globes," beginning in the horny cells.

As to this view, it has been shown by Ribbert that contrary to the formerly accepted belief that a skin cancer originates from the offshoots and prolongations that the epithelium sends down into the cutis the new growth arises from a circumscribed center, that is a misplaced embryonic or postnatal inclusion which grows toward the healthy epithelium fusing with the latter and thus producing the illusion that it is the original epithelium that grew downward into the subjacent layers. Cancer cells starting from their point of origin with a reproductive power that is limitless, destroy everything in their course both connective tissue and healthy epithelium, filling the space previously occupied by them with their own progeny. It must be again emphasized that the normal epithelial cell does not become carcinomatous. Every tumor cell is derived from a preexisting tumor cell back to the original germinating center; hence the origin of tumor cells from "epidermic globes" is meaningless.

Mantilla gives Leloir credit for the first classical description of epitheliomatous degeneration of leucoplakia. According to Leloir, the process is as follows:

"The epithelioma never begins at the level of hyperkeratinized surfaces; as a rule, the degeneration begins either at the ulcerated surface or more commonly at a fissure, the entire process consisting of four stages:

1. Leucoplasia with hyperkeratinization.
2. Desquamation, ulceration, and fissure formation.
3. Irritative lesions, with dekeratinization.
4. Epitheliomatization of dekeratinized regions at the level of the stratum Malpighii.

At the point of junction of the dekeratinized areas and the beginning of epitheliomatous degeneration there are neither the stratum corneum, nor the stratum granulosum, the process being one of invagination."

Leloir essays to trace the various stages leading from leucoplakia to epithelioma dividing the process arbitrarily into four pictures. He has undoubtedly seen the different pictures of the disease in different individuals, but it is questionable whether there is always a causal connection between them.

In his second stage there is ulceration and in the last, epithelioma formation.

This brings up the relation of trauma to cancer, a problem that has not yet been solved. No one can deny the frequent occurrence of cancer in spots subject to long continued irritation; for example, ulcer of the stomach, smokers' cancer, that of chimney sweeps, betel nut chewers, etc. Yet all ulcers of the stomach do not develop into cancer. No one has yet succeeded in producing cancer experimentally in animals by trauma. All that can be said at the present time is that it is a predisposing cause.

All cases of leucoplakia, therefore, need not necessarily end in epithelioma.

Milan states "we do not know the reasons why leucoplakia develops so frequently into epithelioma." He is inclined to think that we are dealing with a biologic change, that is, when an epitheliomatous cell becomes leucoplased its function becomes altered, and as a result an abnormal stimulus to excessive reproduction occurs.

The question of biologic change in the cell leading to increased proliferated tendencies is still shrouded in darkness. Some hold that irritation produces a formative change in the cell, that is, a tendency to reproduce—a view originally enunciated by Virchow. Others, like Weigert and Ribbert, assert that irritation rather tends to destruction and necrosis. Ribbert ascribes the increased pro-

liferation of tumor cells to lack of resistance on the part of the connective tissue. Recent studies in the chemical pathology of the cancer cell are of great interest but shed little light on the subject under discussion.

Gaucher affirms that the presence of what he calls "epidermic globes" determines the tendency of these leucoplakias to become epitheliomata. There are three stages in the evolution:

1. White plaques, usually on the dorsal surface and borders of the tongue.

2. Then comes the stage of sclerotic changes, with desquamation of the superficial, keratinized epithelium. Here also we see the development of the vegetating papillomata.

3. The third stage supervenes if the papillomata are to become epitheliomata.

The presence of "epidemic globes" is probably the beginning of a maligiant growth, but it is questionable whether there exists an intermediate stage of papillomatous formation. It is probable, though not proven, that if cancer is to develop on the site of leucoplakia it is cancer from the beginning.

Joseph determined that the submucous tissue in the papillary layer close under the rete gives one the impression as if the elastic tissue were very greatly rarefied and in some cases even absent, and states, "no wonder if on this account, the resistance has disappeared and an atypical epitheliomatous infiltration thus easily obtains a footing in the connective tissue." The result is the development of cancer.

This explanation accords with Ribbert's view of lessened resistance of connective tissue thus favoring the growth of cancer.

Clinical Manifestations Indicating Cancer: The fear that a given case of leucoplakia may at any time eventuate in cancer and the disposition to give an unfavorable prognosis upon the slightest indication of malignancy make it incumbent upon us as clinicians to determine as early as possible the advent of warning signs. Although clinical manifestations cannot be considered positive without the confirmatory evidence of the microscope, nevertheless they should always be considered in connection with laboratory findings.

Marie gives the manifestations which point to malignant degeneration as pain radiating into the ears, enlargement of submaxillary glands, induration of the plaques and a slow development.

Jayle and Bender point to the fact that cancer develops insidiously, usually starting from the level of the fissures. The plaques are found to be white, parchment-like, hard and indurated.

According to Barnard, the signs of this terrible finale to leucoplakia are:

1. Wart.
2. An ulcer or ulcerated fissure.
3. A nodule.

Reclus states that one can recognize an epithelioma developing from a pre-existing leucoplakia without much difficulty, if he is careful enough to bear in mind the following points:

1. Such epitheliomata are small, elliptical or oval in shape, have an indurated base with desquamation of superficial epithelium leading to ulceration.
2. In the recurrence of such an epithelioma, the new focus is situated, not in the same plaque, but in another one, even in a different organ. That is, if an epithelioma which originated in a plaque on the tongue were removed, it might recur in a plaque on the lip.
3. A decided lack of malignancy.
4. The absence of adenitis.

Treatment: That the treatment for this disease is unsatisfactory is to be expected, when we consider the unsettled state of our knowledge concerning its etiology. Every author recommends a line of remedial agents according to his particular view of the underlying cause. Nevertheless but few favorable results are reported.

Dittrich has been able to effect a cure by deep destruction with the actual cautery.

Sabourand also advises cautery, believing it to be the only adequate method of treatment. According to this author the galvanocautery always gives perfect cure. He cautions however, that this should be applied not too deeply nor too superficially.

Many authors resort to surgical intervention. Among these are found Marie, Mollenes and Trepenard.

Vilanova removes the plaques with bistoury or radio-therapy.

Freudenthal has also used radium with indifferent results.

Morestin advises an extensive surgical procedure, described as "decortication."

Anti-syphilitic treatment is recommended, of course, by those who believe the disease dependent upon syphilis.

Gaucher and Barber report two cases in women whose husbands were syphilitic. These cases were cured by mercury.

Merklen's two cases, cured by mercury, were children suffering from hereditary syphilis.

Milian, Gaucher and Trepenard are all enthusiastic adherents of mercurial treatment, recommending injections of insoluble salts of mercury.

All authors are agreed as to the importance of oral hygiene, unirritating mouth washes, such as solutions of sodium chloride, and the removal of all sources of local irritation. Special formulae for washes, ointments, etc., are given by Butlin, Vanspek, Barnard, Avierinos, Vilanova, Shoemaker, Fare, and others.

The X-ray has been favorably commented upon by Haremaker, who cured a case after six months' treatment, other measures having failed.

Stein, however, reports failure from this treatment, the patient eventually dying from a malignant growth.

Considerable interest had been manifested in the treatment by the high-frequency current. Bruniquel used this method in ten cases, including the simplest form, the beginning of epitheliomatous change and papillomatous plaques. Six cases of simple leucoplakia were permanently cured.

This method of treatment has been carried out, at my suggestion, by Dr. O. M. Shere of Denver, in a sufficient number of cases to warrant the belief that it is of real value, and in the light of our present unsuccessful therapy it may be recommended as offering distinct advantages.

Conclusions: 1. Leucoplakia is of special interest because of its doubtful etiology and because of the dispute regarding its degeneration into epithelioma.

2. The case reported shows the uncertainty of the diagnosis of malignancy. The most definite clinical appearance cannot always be relied upon.

3. Leucoplakia is a generic term. Excluding syphilitic lesions it may be considered a pathologic entity.

4. The views of writers who attempt to show the degeneration into cancer are not tenable in the light of our present understanding of the genesis of cancer. Degeneration of existing cells into cancer cells does not take place. A cancer is such from the beginning, and is not caused, only influenced in its development by irritative lesions.

5. Our understanding of leucoplakia has been confused by attempts to describe a pre-cancerous stage or to establish the theory of its degeneration into a malignant growth. Leucoplakia may however, be looked upon as a warning.

6. Certain clinical manifestations may arise, which, though not positive, are sufficient to arouse the suspicion of malignancy.

7. The results of treatment are unsatisfactory. Fulguration offers considerable encouragement.

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THE LABYRINTH OPERATION; THE FREQUENCY WITH WHICH IT IS DEMANDED AS DETERMINED BY HOSPITAL AND PRIVATE STATISTICS, EXTENDING OVER A PERIOD OF TEN YEARS.*

DR. EDWARD BRADFORD DENCH, New York.

Involvement of the labyrinth as the result either of an acute or chronic middle-ear inflammation, has been the subject of much discussion in otological literature during the past eight years. When suppurative conditions within the labyrinth were first recognized by a definite train of symptoms, and by definite reactions following certain tests, as well as their relief by surgical measures was first shown to be possible, considerable enthusiasm was exhibited on the part of otological surgeons in the conduct of these operations.

During the past few years it is my impression that operative interference upon the labyrinth has been less frequently undertaken than when the condition was first brought to the attention of the medical profession. It is the object of this paper to show by statistics, the relative infrequency with which labyrinth suppuration occurs as a sequel either of acute or chronic middle-ear involvement.

Between the years 1904 and 1915, the reports of the New York Eye and Ear Infirmary show that there were 17,726 cases of acute purulent otitis media, 18,659 cases of chronic purulent otitis media and 9,613 cases of acute catarrhal otitis media treated, making a total of 45,998 cases of acute and chronic infection of the middle-ear, occuring over a period of ten years. During this period, forty-five operations upon the labyrinth were performed, or less than one-tenth of one per cent of the cases of middle-ear involvement, were subjected to the labyrinth operation. I should say that this percentage of cases would be what one might expect as regards the relative frequency of involvement of the labyrinth in acute and chronic infections of the middle-ear.

My own records from May, 1905, to May, 1915, show 659 cases of acute mastoiditis and secondary mastoiditis operated upon; 533 cases of chronic middle-ear suppuration subjected to the radical operation, twenty-three cases of brain abscess; thirty-three cases of meningitis and thirty-seven cases of sinus thrombosis. From 1907 to January 25, 1915, the same records show twenty-two cases

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in which the labyrinth operation was performed. These records would show that a labyrinthitis, demanding operation, is a most infrequent complication of a middle-ear lesion. So that, in all cases of middle-ear suppuration, subjected to operation during this period, in only two per cent of the operated cases did labyrinthitis occur. The results following the operation upon the labyrinth, in these cases, is as follows: The partial operation was performed in ten cases and the complete operation in twelve cases. Of the cases in which the partial operation was performed, seven were cured and three died. In the cases where the complete operation was performed, seven were cured and five died. Of the three cases of partial operation, one died of malignant disease and two died of meningitis. Of the five fatal cases, in which the complete operation was performed, four died of meningitis and one of a pulmonary thrombus, secondary to a jugular thrombosis, the jugular vein having been previously excised, as the case was complicated by sinus thrombosis. In two of the remaining fatal cases, following the complete operation, the operation was performed for the relief of an existing meningitis, the object of the operation being to drain the subdural space close to the internal auditory meatus, according to the method of Neumann. These cases should hardly be classed as fatalities following the labyrinth operation, as meningitis already existed at the time the operation was performed, and the operative procedure was instituted for the relief of the meningitis.

Taking up, then, these three cases, one dying of pulmonary thrombosis and two of meningitis already present,—we have seven cures and two deaths following complete labyrinthine extirpation,—a record which, perhaps, is not so very discouraging when we consider the serious nature of the condition with which we are dealing.

The terms, "partial" and "complete" operation have been used in this paper. By the partial labyrinth operation, I mean a removal of a portion of the labyrinth. For example, a fistula may be found in one of the semicircular canals, usually the horizontal. This patient may have a normal temperature, and no symptoms of labyrinthine involvement, the condition being discovered only at the time of operation. In these cases it has been my practice to curette carefully the margins of the fistula in the semicircular canal, isolate this area by a gauze packing at the completion of the radical operation, and to do nothing more unless symptoms arose. In cases of an open oval window, with no symptoms, I have followed the same plan. By the complete labyrinth operation is understood the free opening of the horizontal semicircular canal, the vestibule and the cochlea, thus securing complete drainage of the entire labyrinth. This drain-

age may also be established by the Neumann operation, in which both the posterior and horizontal semicircular canals are destroyed, and the vestibule drained. The exact procedure which the operator should follow in cases where the labyrinth is involved, has not, to my mind, been settled definitely. The more radical operators insist that with a dead labyrinth, no radical operation for chronic suppuration of the middle-ear should be performed without complete extirpation of the labyrinth. Personally, I am inclined to believe, that, given a dead labyrinth, in a case of chronic suppurative otitis media, where no labyrinthine symptoms are present,—aside, of course, from the total deafness which must be present,—but where there is no disturbance of equilibrium, and where, owing to the absence of this sign we are certain that full compensation has taken place, and where there is no fever and no sign of a beginning meningitis, it is unwise to do a complete labyrinth operation. The radical operation for middle-ear suppuration, in a case of this kind, seems to fulfill all indications. Such patients should be carefully watched, however, during convalescence, and whenever there is the least suggestion of a lighting up of an acute inflammation within the dead labyrinth, as evidenced by rise in temperature, vertigo, nystagmus and headache,—complete labyrinthine extirpation should at once be performed. In three of my cases, where this plan was followed, the patients made a complete recovery.

It may be interesting to note, in comparing the statistics of the relative frequency of labyrinthine involvement, that during the period between 1904 and 1914, 130 cases of brain abscess were operated upon at the New York Eye and Ear Infirmary, and that form 1910 to 1914, thirty-three operations were performed for meningitis. Prior to 1910 the Hospital statistics give us no records of operative interference in meningitis. (I might incidentally say that these statistics are incorrect, as my own records show many cases prior to this date.)

These statistics would show that labyrinthine involvement, as a complication of either acute or chronic middle-ear suppuration, occurs even less frequently than does brain abscess, and also less frequently, probably, than meningitis. Of course, the argument may be raised that the cerebellar abscesses in all of these cases were secondary to labyrinthine involvement. In none of the cases reported in my series, however, has this been the case, but that meningitis frequently follows labyrinthine involvement is well known, and this is fairly well shown in the series of cases which I have reported. Considering, however, that the available statistics at the New York Eye and Ear Infirmary, as far as meningitis is concerned, simply

date from 1910, and that thirty-three cases have occurred during the last five years, as against forty-five cases of labyrinthine involvement in the last ten years, we can hardly presume that all of the cases of meningitis were secondary to a labyrinthine inflammation.

It has been my object in this paper, which, I am afraid, is rather disconnected,—as most papers dealing with statistics must necessarily be,—to show that the necessity of the complete labyrinthine operation is comparatively infrequent, and that the operation should only be undertaken in the presence of very definite symptoms, pointing to either acute labyrinthine involvement or an acute exacerbation of a previous labyrinthine suppuration. When these symptoms occur, operative interference is imperative, and must be prompt if it is to be successful. The expectant plan of treatment, however, in dealing with cases of circumscribed labyrinthitis or of a purulent labyrinthitis, which is quiescent,—will probably be followed by the best results.

15 East Fifty-third Street.

Cancer of the Mouth. ROBERT ABBE, *N. Y. Med. Jour.*, July 3, 1915.

Abbe reports on one hundred cases of cancer of the mouth, that he has observed during the past year and one-half. The distribution of the cancerous lesions was as follows: tongue, 36 cases; inside of cheek, 15 cases; gums, 21 cases; lip, 14 cases, and throat, 14 cases. Of the sex of the patients ninety were men and ten were women. The interesting fact etiologically is that every one of the men patients (with the exception of one) were heavy smokers, each one smoking inveterately from three to twenty cigars a day. One patient, who denied smoking cigars, afterwards admitted that he smoked three packs of cigarettes a day. It was in the cases of the tongue cancer that the factor of irritation was brought out. Of the thirty-six cases, all except three were heavy smokers, and in those who had smoked a pipe it was noticeable that the cancer had begun where the hot smoke from the pipe stem had come in contact with the tongue. ED.

CANCER OF THE LARYNX COMPLICATED WITH LARYNGOCELE.*

DR. HARMON SMITH, New York City.

Laryngocele ventricularis, so named by Virchow, is of comparatively rare occurrence. Up to 1910, Hippel was able to find reported about thirty cases and gives an exhaustive review of the subject in the *Deutsche Zeitschrift für Chirurgie.* In the Transactions of the American Laryngological Association for 1914, Shambaugh reports a case and in the discussion of this case Ingals cites still another.

Deductions drawn from the histories of the cases reported, show that the majority have occurred from sudden blasts of wind gaining entrance into the tissues through the ventricle of Morgagni, or in a certain number of cases the air has extended out into an appendix representing a prolongation of the ventricle of Morgagni. It has occurred frequently in players on wind instruments, or from any sudden explosion of air as coughing, etc.

The patient I was to have presented died in Bridgeport, Connecticut, April 17, just one month after I first saw him.

J. A., aged 37 years, presented himself at my clinic at the Manhattan Eye, Ear and Throat Hospital on March 16, 1915, giving a history of hoarseness with occasional loss of voice, extending over a period of two years and three months. At times he would have difficulty in breathing, but it never reached the stage of cyanosis. He suffered some local discomfort, but he never had, until within the past month or so, any pain. However, within this period the pain has been present, at times radiating towards the ears. The patient continued in his work as a machinist; he had slightly diminished in weight and had felt some physical depreciation.

The primary examination of the larynx revealed a large tumor of the left ary-epiglottic fold, the size of a walnut, which pushed the epiglottis over to the opposite side and forward, so that the view of the larynx was entirely obscured. This tumorous mass likewise projected out into the neck just beneath the hyoid bone and resembled in consistency a soft cystic or fatty tumor. The appearance of the tumor was likewise cystic and at the time of observation, at which several of my confreres were present, we agreed that it was a cyst. The superficial surface of the tumor was cocainized and with a laryngeal scalpel I punctured it, when there was a sudden expulsion of gas, accompanied with a noise such as is made by the puncture of a toy balloon. The ary-epiglottic tumor entirely disappeared, and likewise the tumor in the neck. The epiglot-

*Read before the Section on Laryngology and Rhinology of the New York Academy of Medicine, April 22, 1915.

tis resumed its position but a further examination of the larynx revealed a large mass occupying both true cords, ventricular bands and the anterior commissure of the larynx. The laryngocele appeared to be secondary to this invasion of the larynx. There was a distinct cancerous odor to the breath, slight fixation of both cords, a small area of ulceration of one cord and no improvement of the voice after the evacuation of the air sack. To eliminate syphilis, although the patient gave no history of this disease and had three healthy children, a Wassermann test was made, which proved negative.

The patient returned several times to the clinic, upon each occasion the air sack was refilled and on the last visit, March 30, he remained in the hospital over night, for the administration of salvarsan, to still further eliminate the possibility of the growth being syphilitic. During the night the air sack refilled to the same extent apparently as on any of the previous occasions. The following day I made a good-sized rent in the sack and went down through the opening with a probe, which seemed to approach the ventricle of Morgagni.

The patient returned home with instructions to perpare his domestic and business affairs for a long sojourn in the General Memorial Hospital, where we expected to employ radium after doing a preliminary tracheotomy. He was cautioned to hasten his affairs as much as possible and return immediately, as there was danger of sudden edema.

Evidently his condition progressed rapidly, for in a letter from Dr. G. A. Davis of Bridgeport, Conn., who referred the case to me, stating that the patient had died suddenly, he further stated that he had lost twenty-five pounds since the salvarsan injection. Just previous to his demise he had complained of pain in the chest, followed by chills, and was suffering from insomnia. The breath became particularly foetid and the respiration markedly embarrassed. The temperature on the last day of the doctor's visit, April 16, was only 99.4°, the pulse 96 and the respiration 30. The next day, Thursday, at 6:30 a. m., his wife found him dead in bed.

The presumptive evidence is that a sudden edema occurred, producing suffocation. No autopsy was permitted and the diagnosis of cancer of the larynx is only inferential, but as both tuberculosis and syphilis had been excluded by the tests at our command, and in view of the fact that there were some of the cardinal symptoms of laryngeal cancer present, in spite of the man's age, thirty-seven, I am confident that the underlying cause of the disturbance was laryngeal carcinoma.

44 West Forty-ninth Street.

SOMNOFORM AS AN ANESTHETIC.*

DR. T. H. HALSTED, Syracuse, N. Y.

I have used Somnoform as an anesthetic for seven or eight years and estimate that it has been given for me in my operative work about four thousand times. During the first year or two after beginning its use, it was employed only occasionally and with considerable fear and anxiety because of the fact that it was a comparatively new anesthetic, and my colleagues in other cities to whom I spoke of it with increasing enthusiasm, warned me of its dangers. Nearly every one had heard of a death here and there, but on being pinned down to facts, no one of them knew definitely of a fatality that could be positively attributed to somnoform. It usually turned out that the anesthetic employed was ethyl chloride, which it is true is a large constituent of somnoform, but ethyl chloride and somnoform are not the same, the disadvantages and dangers of ethyl chloride being eliminated largely, if not entirely, by the combination of ethyl chloride with bromide of ethyl and methyl chloride, which combined in certain proportions, form what is known as somnoform. If not the first, I was one of the earliest surgeons in my city to employ it, either as the only anesthetic in a short case or as a preliminary to ether in a prolonged operation. Very soon other surgeons in other branches of surgery began using it, so that to-day it is the usual anesthetic employed in all the general hospitals of Syracuse as a matter of routine, as a preliminary to ether, or in short operations requiring but a minute or two, as the sole anesthetic in the case.

Somnoform is one of the most recent of the general anesthetics. While its component parts are old, the particular combination of ethyl chloride, methyl chloride and ethyl bromide, forming the combination to which was given the name somnoform, by its discoverer, Dr. G. Rolland, is new. Dr. Rolland held the chair of Anesthesia in the Bordeaux School of Dentistry, and in 1899, after experimenting to find an anesthetic to replace nitrous oxide, discovered that somnoform answered this purpose, in that it was safe, did not require a cumbersome apparatus, provided a longer anesthesia, acted quickly and was followed by a quick revival of the patient to consciousness. He maintained that an ideal anesthetic was one that "would enter into, sojourn in, and make its exit from the body in the same manner that oxygen does; that the tension of the anesthetic agent should be greater than that of

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oxygen, in order that it might take the place of oxygen in the lung alveoli, and that as the degree of volatility of a gas determines its pressure, the more volatile a gas the more easily it can be absorbed, and consequently the more easily it can be made to take the place of oxygen."

Somnoform evaporates at 0° C, a fact which fulfills the objects of his definition.

The agents which were best suited to produce such an anesthetic were ethyl chloride, methyl chloride and bromide of ethyl.

Ethyl chloride, however, was found not to be volatile enough, and had a high death-rate.

Bromide of ethyl was less volatile than ethyl chloride and very unstable, but in experienced hands was absolutely safe but suited only for very short operations.

Methyl chloride was found to be more volatile than either of the other two.

After experimentation, it was found that a combination of the three, in the proportion of ethyl chloride sixty parts, methyl chloride thirty-five parts, and bromide of ethyl five parts, would induce a quick anesthesia due to the presence of the methyl chloride, and a continuation of the anesthesia beyond the limits of the methyl chloride, by the presence of ethyl chloride and of ethyl bromide, which is the least volatile of the three. Somnoform has been used several million times, perhaps most largely by dentists, and with an almost infinitesimal death-rate. Recently, because of the discovery that the excess of methyl chloride caused, after a time, a decomposition of the solution, the formula was changed to the one now used, viz., ethyl chloride eighty-three parts, methyl chloride sixteen parts and ethyl bromide one part. This is the formula now employed, and is the same as that of Bruggs' mixture, an apparently identical anesthetic going under a different name, although Bruggs uses the original as well as the later formula. Somnoform is made in France, Bruggs' mixture in Switzerland.

Somnoform is put up in 3 cc. and 5 cc. capsules, and in 60-gram vials. It is advisable to use the capsules because they are more convenient. Because of the extreme volatility, the vials are not as reliable unless the contents are used up within one day on successive cases. I have seen the capsules, only, used.

Somnoform induces complete anesthesia in from 25 to 60, at most 90 seconds, and the anesthesia continues from one to five minutes, usually about two minutes, so that it is adaptable only for operations of short duration, or, a great field for its usefulness, as a preliminary to ether, relieving the struggle and the disagreeable feature of the first stage, and saving three to ten minutes in

time over the use of straight ether. Somnoform is rarely followed by vomiting, or other disagreeable after-effects, the patient being completely out in from three to five minutes, occasionally going on into a quiet and peaceful sleep.

The patient should be prepared as for any other general anesthetic, clothes removed or loosened, the stomach empty, though this does not seem so necessary as for ether or chloroform. It does not appear to be a heart depressant, failure of respiration preceding, in bad cases, cardiac failure by several minutes. Artificial respiration has always, or nearly always, restored the patient. In the beginning of the anesthesia, the pulse is rapid, due probably to apprehension, but it soon slows down to nearly normal. Dr. Dudley Bruxton says there is no change in the leucocyte count, or in the hemoglobin before and after somnoform. There is no change in the urine. Blood-pressure is first increased, then it drops slightly. The chief action is said to be first on the cerebellum, later on the cerebrum.

Before discussing the question of death-rate, it might be said, as has so often been said before, that in no branch of medical statistics are statistics so unreliable as in those relating to anesthetics. There is a deep-seated desire on the part of every surgeon or anesthetist, to hush up a fatality caused by an anesthetic. Dr. J. J. Buettner, lecturer on anesthetics in the Syracuse Medical College, to whom I am indebted for much of the matter contained in this paper, made an investigation of the use of somnoform in the hospitals of the city of Syracuse, and found that it had been used in these hospitals seven or eight years, about 15,000 times without a fatality. In addition to this, it has been used probably as many times more by dentists and surgeons in their private practices outside the hospitals, also without a fatality, so far as he could discover. Dr. Rolland, in a report on the use of somnoform during the last ten years, reports 2,000,000 administrations at least, without a single fatality. Dr. W. H. DeFord, whose experience with somnoform has perhaps been greater than that of any other person, outside of the discoverer, states in his book on "Lectures in General Anesthetics in Dentistry," that the death-rate of ethyl chloride is 1 in 12,000; ethyl bromide 1 in 5,000, while that of somnoform is but 6 in 2,000,000. Notwithstanding this seemingly remarkably low death-rate, there is an opinion among many laryngologists and otologists of my acquaintance, that somnoform is a very dangerous anesthetic. Having heard that a somnoform death had occurred in Buffalo, an investigation revealed that this drug had not been used in the case, but that ethyl chloride had. In another rumored case in Utica, a letter from the chief of the hospital states that

somnoform had not been employed in the case at all. While this paper was being prepared, a child requiring an emergency abdominal operation was brought to one of the Syracuse hospitals where somnoform is used as a routine, preliminary to ether. The surgeon asked that somnoform be administered as usual, but the anesthetist, for some reason, preferred not to, and it was not used. The child was given straight ether and died on the table from the anesthetic. A post-mortem revealed an enlarged thymus, and the status lymphaticus. Had somnoform been used, the death would doubtless have been charged to it. This merely emphasizes the difficulties that surround the determination of the real cause of death in many of the fatalities attributed to the anesthetic.

Too much stress cannot be laid upon the importance of the manner of administering an anesthetic, whether it be somnoform, nitrous oxide, chloroform or ether. The ultimate result of any anesthesia depends probably more upon the personal equation of the administrator than it does upon the effect of the drug itself.

Dr. Buettner, who is an expert and most capable anesthetist of large experience, furnished me the following description, for use in this paper, of the method of using somnoform. He says:

"An important consideration is to be sure of a good fit of the face-piece in order to prevent any escape of anesthetic from beneath it. It is therefore necessary at times in short operations in the mouth, as in the extraction of teeth or removal of adenoids and tonsils, to have a mouth-prop in the mouth before starting the anesthetic, such prop being of a type that will allow the mask to fit the face closely. The ordinary rubber dental props are best adapted for this. If the face-piece does not fit closely, it should be covered by a towel or padded with cotton to obtain air-tight results. All necessary precautions should be taken with somnoform, even for a short anesthetic, as for all other anesthetics, i. e., false teeth should be removed and there should be no tight bands about the neck or waist. The most satisfactory method of administration is this: Having placed the patient in the proper position for whatever operation is to be performed, and observing absolute quiet as far as possible, the capsule of somnoform is placed in the capsule chamber and the telescoping cap applied. The somnoform valve should be closed and the air valve open. By pressure on the telescope cap the capsule is broken and its contents expelled in gauze or lint and retained in the rubber bag. This should never be done with the inhaler on the patient's face. The face-piece is now adjusted to the face and the patient advised to breathe naturally. Experience has proven this method of breathing far superior to the instruction to breathe deeply. The patient at first breathes only air. This inspires the

patient with the fact that there is no choking or strangling and that he will be able to breathe freely. Then the lever controlling air and somnoform valves is turned slightly to allow some somnoform to be inhaled but not enough to induce choking or strangling. The lever is then gradually turned until eventually all somnoform and no air is administered. One cannot follow any definite rule of administration but must be guided by the actions of each patient. If the operation is a short one the patient is ready for work as soon as the first sterterous breathing is heard. If it is a long operation and the ether sequence is to be used, the anesthetist will now go on with ether. It is certainly a great advantage if ether is to be used to start with somnoform as a quicker, quieter and more peaceful anesthesia is thus obtained with a great saving of ether and the avoidance of the disagreeable odor of ether which is disliked by so many patients. In comparison with nitrous oxide alone, somnoform gives a quicker and greater anesthesia with more marked relaxation and no cyanosis. In comparison with ethyl chloride alone it is safer, quicker and gives greater relaxation with less nausea and subsequent headache.

"The greatest field for somnoform is in minor surgery, such as extraction of teeth, opening of abscesses, reduction of fractures, pelvic examinations, paracentesis, removal of adenoids, breaking up adhesions in bursitis."

In my judgement, speaking entirely from my own personal experience, as an oto-laryngologist, somnoform or Bruggs' mixture, which is the same thing under another trade-name, is the most efficient, safest, most rapid and most agreeable general anesthetic for such minor operations as incision of one or both ear-drums, curettement of granulations in the tympanic cavity, opening of abscesses or furuncles of external auditory canal, or any other part, incising of peritonsillar abscess when general anesthesia is desired, as perhaps the patient himself thinks it always is, replacing of recent nasal fractures, opening into the maxillary sinus in the Mickulicz operation after the section of the inferior turbinate has been removed under cocaine, breaking down of adhesions in the naso-pharynx in the adult and many other less frequent short operations. These are all operations occurring frequently in the practice of each man here, and many of you doubtless employ a local anesthetic for most of them, but I submit that in no one of them does the patient believe the local anesthetic is as perfect as it is supposed to be and in no case is the anesthesia as perfect as it is when a general anesthetic is employed.

Of course, the most frequent use of all in my practice is in cases of adenoid and tonsil operation and here a few words, giving special

indications are perhaps desirable. Because of the necessity of removing the mask as soon as the operation is begun, and because of the rapid recovery to consciousness as soon as the anesthetic is discontinued, say one and a half to two minutes, I never now attempt, in the case of a child or adult, to do the complete adenoid and tonsil operation under somnoform alone, because while I have often done it successfully and satisfactorily, yet I have so often found the patient conscious before the operation was entirely completed, and tonsil hemorrhage arrested, that only in very exceptional cases do I attempt the complete operation with somnoform alone.

My usual practice, in the case of a child, is to have the anesthetist get the child under with somnoform and follow with ether. In the case of adults my usual practice is to remove tonsils with sharp dissection and the snare under local novocain anesthesia, and if adenoids are to be removed, to then have the patient put under somnoform when the adenoids are removed. I use the Sluder operation in children in preference to any other method of tonsillectomy, and if tonsils alone, without adenoids, are to be removed, somnoform is sufficient, but if the tonsils are to be dissected and removed with the snare, somnoform alone will not be sufficient in the majority of cases.

In operations to be prolonged more than two minutes, ether preceded by somnoform, is the routine.

In conclusion: 1. Somnoform is the ideal anesthetic for both children and adults for short operations, producing profound anesthesia in from 30 to 90 seconds, allowing a period of from one and one-half to three minutes for operating. The recovery to consciousness occurs usually within three to five minutes after discontinuance of the anesthetic.

2. It is as safe as nitrous oxide anesthesia, is as rapid in its action, recovery being equally rapid, does not produce cyanosis, has no serious after-effects, and because of the simplicity of the apparatus and ease of transportation, is preferable to nitrous oxide for operations of short duration.

3. The mortality is lower than that of any other general anesthetic in use, unless it may possibly be nitrous oxide gas.

4. As a preliminary to ether, somnoform has a very great field of usefulness, eliminating largely the disagreeable struggle and excitation of the first stage of ether, shortening the time by from three to ten minutes, and lessening the quantity of ether used.

5. A competent anesthetist is as desirable in the administration of somnoform as in the employment of any other anesthetic.

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BARANY'S CEREBELLAR LOCALIZATION.*

Dr. Louis K. Guggenheim, St. Louis.

Vestibular nystagmus is characterized by the presence of two components, a slow and a rapid. The slow component is the result of vestibular innervation of the abducens and oculo-motor nuclei. In 1907 a paper was published by Bárány in which he stated that no satisfactory explanation of the rapid component had been found. Soon afterwards observations were made in the case of a man whose right labyrinth was operated upon. During narcosis the eyes moved to the right and remained in that position; the rapid component was not present. As soon as consciousness was regained the rapid component returned. Bárány concluded that there must be a higher centre, probably in the cerebral cortex, for the rapid component and that the absence of the rapid component during narcosis was due to the fact that the centre was not functionating. Further observations were made in the following case: The patient could look neither to the right nor to the left, but could look upward and downward. The caloric reaction was as follows: Cold water to the right ear resulted in a deviation of the eyes to the right; cold water to the left ear resulted in a deviation of the eyes to the left. This case proved to be one of pontine involvement. After observing this case and after carrying out certain experiments upon animals, Bárány concluded that the origin of the quick component, of the usual forms of nystagmus, is in the pons. The exact locations of the centres have never been determined. Irritation of the gyrus angularis will cause the eyes to move to the opposite side. This is possible because of the fibers which pass from the cortex to the pons. If a lesion exists in the pons, destroying the centres for movement to the right and to the left, there will be no looking and no nystagmus to the right or left. A lesion in the cerebral cortex may result in the inability to look to the opposite side; but the rapid component to that side will still be present. If there is paralysis of the right supranuclear centre (centre for looking to right) and the right ear is irrigated with hot water there results only the slow component of nystagmus to the left. Normally, there would result a rapid component to the right and a slow component to the left. If the right

*Read before the Washington University Medical Society, March 8, 1915.
A review from the Department of Otology, (Prof. J. B. Shapleigh), Washington University.

ear is irrigated with cold water there will result a rapid component to the left and a slow component to the right. If the left ear is irrigated with cold water there would result no rapid component to the right; only a slow component to the left. If the left ear is irrigated with hot water there will result a rapid component to the left and a slow component to the right. Through an inhibition of the left supra-nuclear centre the eyes can move from the left to the middle line without irrigation. After the right ear has been irrigated with hot water the eyes are fixed in the extreme left position and cannot be brought even to the middle line because of the force of the vestibular innervation. When the right ear is irrigated with cold water there results a vestibular innervation to the right. The individual can now look both to the right and to the left; to the left with the left supra-nuclear centre, to the right by inhibiting the left supra-nuclear centre and permitting the right vestibular innervation to have its effect. There are supra-nuclear centres for up and down movements in the corpora quadrigemina; a retractive nystagmus resulted in one case of paralysis of the centre for upward looking when the patient tried to look upward. There is a general law that if one nerve conducts a stimulation the antagonist conducts an inhibition. This is especially true of the vestibular apparatus. Another law is that from every nerve centre there is a continuous supply of tonus impulse. If the field under discussion the innervation as well as the inhibition originates in the end-organs of the vestibular nerves, the two impulses going to opposite sides.

The cause of the rapid component of vestibular nystagmus, according to Bárány, is an explosion of tonus energy in one or the other of the supra-nuclear centres. An irrigation of the right ear with cold water causes normally a nystagmus with the rapid component to the left; the slow component to the right. The slow component to the right is due to the innervation of the fibers passing to the right abducens and oculo-motor nuclei. At the same time there is an inhibitory influence exerted through the fibers crossing to the left abducens and oculo-motor nuclei. This inhibitory influence upon the left results in an accumulation of tonus energy in the left supra-nuclear centre; which energy constantly eminates normally from the supra-nuclear centres and is dissipated by the voluntary movements of the eyes. This accumulated tonus energy finally explodes and causes the rapid component of nystagmus.

Collaterals to the Cerebellum: Ramon Y Cajal found that every fiber of the vestibular nerve, before entering Deiter's nucleus, gives a collateral to the cerebellum; these collaterals from each side pass

to both hemispheres and to both sides of the vermis. Through these fibers to the cerebellum we get certain reaction movements, namely, pointing errors and falling, and through them the vestibular apparatus controls the cerebellum. These reaction movements normally accompany vestibular nystagmus and are invariably in the direction of the slow component. If nystagmus is to the left the pointing error will be to the right. By nystagmus to the left we mean that the rapid component is to the left. If the head is bent to the left shoulder and nystagmus is to the left the pointing error will be upward. If the right ear is irrigated with cold water we get a nystagmus to the left. This nystagmus consists of both a rotatory and a horizontal component. The reactions from the horizontal element are always present in normal individuals; those from the rotatory element are not always present. Drs. Shapleigh, Koetter, Lyman, Griot, and the writer, are, at present, carrying out a series of tests dealing with these reactions and intend reporting their results in the near future. With nystagmus to the left, as above noted, the pointing error will be to the right from the horizontal component. The rotatory component to the left may cause a falling of the body to the right, a deviation of the right arm downward, and a deviation of the left arm upward. In order to obtain a reaction the arms must be brought into the plane of the nystagmus. In the above example the body reacts to the rotatory element of the nystagmus by falling to the right; that is, in the frontal plane (the plane of the rotatory element). In testing the arm reaction from the horizontal element of the nystagmus we have the patient point with closed eyes from his knee to the examiner's finger, which is held in front of the patient on a level with his shoulder. As the patient's finger touches the examiner's finger it has reached the horizontal plane and the deviation will be to the right or left, depending upon the direction of the nystagmus. In testing the arm reaction from the rotatory element it is necessary to bring the arm into the frontal plane by having the patient point from straight forward to the side. The arm will deviate either upward or downward as the case may be. If there is nystagmus to the left and the head is turned to the left the nystagmus is brought into the sagittal plane and is directed backward. In this position the patient will fall forward. If the arms are brought from the sides to the front they will deviate downward. If the head is turned to the right nystagmus will be forward. In this position falling will be backward; the arms when brought forward will deviate upward.

The Falling Phenomenon: Bárány was the first to observe that the direction of falling is changed with change of head position, the

nystagmus remaining the same. The nystagmus does not cause the falling. The same vestibular innervation which causes the nystagmus causes the falling.

We are conscious of the position which we occupy in space because of the kinesthetic sense. This sense is influenced by a change in the position of the head. According to Bárány's theory there are two tonus centres in each half of the vermis: in the right half a centre controlling falling forward and to the right and a centre for falling backward and to the right; in the left half a centre controlling falling forward and to the left and a centre for falling backward and to the left. Falling forward occurs when the two centres *forward-right* and *forward-left* are innervated at the same time. The side components fall away and falling straight forward occurs. Falling to the right occurs when the two centres *forward-right* and *backward-right* are innervated. The forward and backward components disappear and falling occurs to the right. These centres get impulses from the vestibular apparatus and from the cord at the same time, and in turn send out the impulse for the reaction movement of falling. The falling reaction is absent after the cerebellum has been destroyed.

Pointing Test: The pointing test was made years ago without its present significance being understood. Bárány's early observations were made in cases of cerebellar abscess. Spontaneous errors in pointing were noted in these cases. With the turning test it was found that certain physiologic pointing errors or reactions were absent. After numerous observations Bárány has concluded that there are definite centres in the cerebellar cortex which control certain body movements. Additional knowledge of these cerebellar centres of control was gained by means of the "cooling" experiment. This experiment was first made over the motor area of the brain of a monkey. The exposed dura was covered with a rubber membrane into which ice water was poured. There resulted a paralysis of the opposite side. When water at body temperature was substituted the paralysis disappeared. Bárány first applied the test in a case of healed cerebellar abscess. Over the area from which the bone had been removed (right side), the pulsation of the brain could be felt. This area was frozen with ethyl chloride (application two minutes). The following effect was noted: pointing error outward with right arm and right leg, showing paralysis of the centres controlling inward movement. Nystagmus was then produced by turning. The corresponding inward reactions were lost. The reactions on the left side were normal. Before the experiment the pointing

was normal and the reactions were present. Next a case of healed extra-dural abscess was utilized. Over a large area, bone had been removed. This area was treated in the same way with ethyl chloride. The same effect was noted. In cases where the dura was exposed Bárány substituted, for the ethyl chloride, a small sterile metal capsule containing ice. In another case in which there was no pointing error before operation, there appeared after operation a spontaneous pointing error to the outside with the wrist, with no reaction to the inside. During an operation upon the left mastoid, the cerebellum had been accidentally injured just posterior to the aural labyrinth. As the result of these observations and many others of a similar nature, Bárány was finally able to definitely localize the following cerebellar cortical centres:

(a) Wrist centre for inward movement—just posterior to labyrinth.

(b) Arm centre for inward movement—posterior to wrist centre.

(c) Hip centre for inward movement—posterior to arm centre.

(d) Arm centre for outward movement—just under tentorium and 5 cm. behind auricle.

(e) Arm centre for downward movement—posterior to arm centre for outward movement.

The wrist, arm, and hip centres controlling movement inward are situated in the lobus inferior medius or lobus biventer. The arm centre controlling movement outward is situated in the lobus semilunaris inferior and lobus semilunaris superior. The arm centre for downward movement is situated in the posterior portion of lobus semilunaris superior and inferior.

If the function of any of these centres is interfered with through involvement of the cerebellar cortex there results not only a spontaneous pointing error but also a loss of the normal reaction. If there is a spontaneous pointing error and we are still able to elicit the normal reaction we must conclude that there exists only a paresis of the centre resulting from pressure with no actual involvement of the cerebellar cortex. Prolonged pressure may cause loss of reaction. The spontaneous pointing error from cerebellar cortical involvement disappears in time as a result of cerebral compensation. The reaction usually remains absent. The most common error is outward. The error is on the side of the involvement. There are undoubtedly many centres in the cerebellar cortex which have not yet been found.

Anatomic Explanation of the Pointing Error: Vestibular innervation of the cerebellum passes through the moss fibers which

represent in part the endings of the vestibular fibers. From the moss fibers this wave of innervation passes to the granular layer of cells from which it is carried through the parallel fibers to the Purkinje cells. Through the axis cylinders of the Purkinje cells the reaction wave then passes out. The spinal-cerebellar or kinesthetic innervation wave ends also in the moss fibers. The pointing reflex is different from other reflexes in that a voluntary innervation of the part is necessary before the reflex can manifest itself. According to Cajal every pyramidal fiber gives a collateral to the pons from where a new neuron passes to the opposite side and into the cerebellum. Here collaterals are given off which end around the Purkinje cells as climbing fibers. This explains the influence of the cerebrum upon the cerebellum during the vestibular reaction, etc. From the Purkinje cells the reflex wave passes out through the axis cylinders to the dentate nucleus. The wave then crosses the median line to pass to the red nucleus. From the red nucleus the wave probably passes either through the reflex fibers of Monakow (rubra-spinal) to the opposite side of the cord or from the red nucleus to the cerebral cortex. Whether the reflex occurs from the passage of the wave to the cerebral cortex and then downward or whether it results from a direct passage of the wave through the Monakow fibers is not known. We know that the vertigo accompanying nystagmus results from the vestibular innervation passing from the red nucleus to the cerebral cortex. Other descending cerebellar tracts than the rubra-spinal have been described and it is possible that the wave passes through one of these. An argument in favor of this is that the rubra-spinal tract in man is poorly developed. The influence of head position depends upon the kinesthetic fibers and upon the otolith organs.

726 Metropolitan Bldg.

Treatment of Vincent's Angina. C. CALDERA, *Arch. ital. di Otol., Rinol., e Laringol.*, V. XXVI, April, 1915.

The case reported by Caldera was one showing clinical-evidence of a syphilitic etiology, notwithstanding that the Wassermann reaction was negative. It resisted all ordinary local treatment, but was rapidly cured by neo-salvarsan. ED.

TWO CASES OF FOREIGN BODIES IN THE BRONCHI COMPLICATED BY GENERAL EMPHYSEMA.*

DR. HENRY L. LYNAH, New York City.

Case 1. William J., 8 years of age, ill five days, was admitted to Riverside Hospital, January 28, 1915, for post-nasal glandular and laryngeal diphtheria.

The ambulance surgeon who brought the boy into the hospital did not consider intubation necessary and thought the whole trouble was probably due to obstructed pharyngeal croup from the enormous amount of swelling of the neck and face. A careful physical examination was made by Dr. E. M. Goldstein on admission and he noted the supposed enormous collar of brawny cellulitis to be due to subcutaneous emphysema.

The neck and face were enormously puffed out with air and the ocular and palpebral conjunctiva of the left eye stood out as a large air-bubble.

The chest and abdomen were next examined and the emphysema found to extend over the entire trunk down to Poupart's ligament. The arms and hands were also ballooned with air.

The pharynx. There was but slight exudate on the tonsils but the uvula was gone and was thought to have sloughed off, but a history from the parents the following day cleared up this error. The tonsils had been removed and the uvula was probably removed with them; however, there was not sufficient exudate present to account for such clean amputation of the uvula and part of the posterior pillar of the right side.

There was a peculiar inspiratory-expiratory wheezing accompanied by a cough which was not sufficiently constricted to require intubation. The heart action was rapid but regular. A dose of 10,000 units of antitoxin was administered, 5,000 units having been administered prior to admission by the family physician.

On the 29th, the second day after admission, the emphysema and stenotic symptoms had markedly progressed and intubation was resorted to in order to relieve the condition. Dr. E. M. Goldstein, Resident Physician of Riverside Hospital, intubated by the O'Dwyer method with an 8-9 O'Dwyer tube. The intubation instead of relieving the stenosis made it much worse and the patient was almost

*Read before the Section on Laryngology and Rhinology of the New York Academy of Medicine, April 22, 1915.

asphyxiated. The tube was at once removed and following it a cast of membrane was coughed up.

I was notified of the condition and on my arrival at the hospital, made a thorough physical examination of the patient.

The boy was terribly puffed up with emphysema and the breathing was decidedly asthmatic.

The pharynx showed a thin exudate on the tonsils, the uvula was gone. The same exudate was in the laryngo-pharynx.

A direct laryngeal examination was made and showed the epiglottis to be free of exudate, nor was there any exudate on the ary-epiglottic folds.

The arytenoids were enormously swollen but free from exudate. The ventricular bands and vocal cords were plainly visible, free of membrane but congested. There was apparently marked subglottic infiltration.

An 8 mm. bronchoscope was passed and small patches of membrane and ulceration were seen below the cricoid extending down to the right main bronchus. Both bronchi were examined but no casts of membrane were seen and the exfoliated cast which had been coughed up was unquestionably the cause of the respiratory difficulty. No re-intubation was necessary.

The case is interesting from the standpoint of the subcutaneous emphysema occurring in a case prior to any instrumentation, and I was unable to explain the cause of the emphysema. The boy had a rather slow convalescence due to myocardial changes and post-palatine paralysis. The cultures taken by the direct method were all positive.

The same night I was called to see a foreign body case with emphysema and this case recorded as Case 2 may explain the cause of this subcutaneous emphysema.

Case 2. E. F., male child, three and one-half years of age, aspirated four pieces of carrot pulp while at dinner on the evening of February 1, 1915. According to the history given by the mother, the child, while eating, had a violent choking spell and suddenly became black. She and the father administered "first aid" measures by spanking and poking their fingers down his throat, and after a piece of the carrot came out the child was able to breathe. As the parents were satisfied that they had removed the foreign body, but little further attention was paid to the condition even though at times there were paroxysmal attacks of coughing.

On the evening of February 5, 1915, owing to the extreme condition of the child, the family physician, Dr. W. J. Stub, of Freeport, L. I., was notified, and on his arrival at the house and obtaining

the parents' history which is afore stated, notified me of the condition. When I arrived on the scene at 1 a. m., I found the patient in extremis, almost pulseless, unable to cough, but with terrible asthmatic wheezing. There was marked subcutaneous emphysema about the face and neck, the eyelids were emphysematous and the emphysema extended over the entire trunk down to the tight fascia lata of the thighs. A rapid physical examination was made of the anterior portion of the chest. There was but little air entering either lung, and with the crackles from the subcutaneous emphysema, and rasping transmitted noise of the respiratory effort, the auscultatory examination was of little use. The percussion note was hyperresonant over both lungs anteriorly. No posterior physical examination of the chest was made. A rapid direct laryngeal examination was made.

The whole of the larynx was apparently swollen but of a peculiar glistening appearance; the vocal cords were not visible. The small bronchoscope of Dr. Jackson was introduced, not for the purpose of inspecting the tracheo-bronchial tree, but to act as a guide for low tracheotomy and also to give air, so that the tracheal compression due to the operation would not occlude all air. This method facilitates rapid tracheotomy in these extreme cases, and I may add was the only means by which one could possibly locate the trachea in this case with such emphysematous swelling of the neck. On opening the trachea the bronchoscope was removed by an assistant but there was no expiratory cough. A 7 mm. tracheoscope was introduced between the tracheal dilators and a large piece of carrot pulp removed from the right bronchus before death, the other pieces having been removed at necropsy.

The necropsy explained how the subcutaneous emphysema occurred in Case 1 without instrumentation. This case, like the former, was markedly emphysematous from the prolonged respiratory effort.

Necropsy. The superior mediastinum was emphysematous and the thymus gland was covered with air-bubbles. The visceral pleurae of both lungs were covered with blebs; there was no pneumothorax. The lungs were enormously increased in volume from compensatory emphysema.

The outer surface of the pericardium was covered with large blebs, and the pericardial sac ballooned with air.

The larynx showed emphysematous areas which were noted, as a peculiar swelling by direct examination. The trachea showed no emphysema of the mucous membrane, neither did the main bronchi, nor their branches. There was a small piece of carrot pulp impacted

in the right superior lobe bronchus. A portion of the superior lobe was collapsed; this area was depressed below the surrounding emphysematous lung tissue. The middle and inferior lobe bronchi were not occluded, but these lobes were enormously emphysematous. The left main bronchus contained a small piece of the pulp, while the fourth and last piece was lodged in the lower lobe bronchus, at which site there was a fairly well defined abscess.

These lungs also showed areas of collapse and emphysema. Rupture of the blebs through the pleura into the mediastinal spaces, which in turn follows the deep cervical fasciae, and gets out into the subcutaneous cellular tissues of the body is the only explanation I can offer for the condition of subcutaneous emphysema, which occurred in these cases of bronchial obstruction prior to instrumentation.

24 West Fifty-ninth Street.

Pathologic Anatomy of Exophthalmic Goitre. H. RAUTMANN, *Mitteilungen a. d. Grenzgeb. der Med. u. Chir.*, XXVIII, No. 3, March, 1915.

Rautmann is of the opinion that in exophthalmic goiter the disease is not solely confined to the thyroid, but that it affects all the glands of internal secretion. The characteristic of the thyroid, in his own cases, was that it had reverted to an infantile type and the severity of the disease seemed to be proportional to the degree of the infantile character of the histologic findings. This not only applies to the thyroid, but to the thymus also, and in some cases, to the other internal secretory glands. The thyroid was always, the thymus was usually, involved; the parathyroids and pituitary only occasionally.

The changes in the thyroids, thymus, parathyroids and pituitary are predominately of a hypertrophic, hyperplastic nature. In the suprarenals, ovaries and the Islands of Langerhans, the changes are hypoplastic and atrophic. ED.

FOREIGN BODY IN LEFT BRONCHUS.*

Dr. Henry L. Lynah, New York City.

Helen F., two and a half years of age, ill three days, was admitted to Riverside Hospital, February 4, 1915, having been intubated for laryngeal diphtheria prior to admission with a two-year rubber O'Dwyer tube.

Physical examination on admission: Child fairly well developed and nourished, eyes and ears normal, no nasal discharge. In the throat there was slight exudate on the left tonsil. The heart action was rapid but regular; there were no murmurs.

The lungs were negative aside from the scattered transmitted rales throughout the chest which are the rule in intubated cases.

Temperature, 101; pulse, 130; respiration, 30.

A dose of 15,000 units of antitoxin was administered.

On February 17, the temperature, pulse and respiration had reached normal. The tube was removed, and the patient did well without the tube until the 21st, when, owing to subglottic contraction, it was necessary to reintubate. The tube was again removed on March 1, but this time spasm of the adductors necessitated immediate reintubation. Again the tube was removed on March 8 and recurrence of adductor spasm caused immediate reintubation.

The tube was auto-extubated on March 11 and the child remained without the tube until the 23rd when, owing to progressive dyspnoea and the development of broncho-pneumonia, reintubation was necessary.

There were areas of broncho-pneumonia scattered throughout the right lung. The little patient was in poor condition, had severe coughing spells, and coughed out a quantity of muco pus. At times there was extreme cyanosis. The temperature was 103, pulse weak and rapid and respirations labored.

On March 28, the condition remained unchanged and the left lung had become involved with broncho-pneumonia. There was also O. M. P. A. left, at this date.

Owing to the pneumonia and the poor condition of the patient, the tube was allowed to remain until April 3, when one of the House Staff, while attempting to extubate the patient, shoved the tube down below the glottis and it lodged in the bronchus.

*Read before the Section on Laryngology and Rhinology of the New York Academy of Medicine, April 22, 1915.

The patient was taken to the Metropolitan Hospital by Dr. Westmoreland and x-rayed. The tube was seen by x-ray to be in the left bronchus.

I was called to see the child on the evening of April 3. The condition of the patient was extreme. The child had been reintubated with a one-year tube, owing to adducted spasm, but this was subsequent to the x-ray examination, so I doubt that the first tube was forced down into the bronchus.

Physical signs: Respiratory murmurs were diminished over left lung in comparison to the bronchial respiration over the pneumonic areas in the right lung; however, the respiratory murmur was indistinct.

Expiration was prolonged and noisy, there was marked cyanosis. Owing to the extreme condition of the child a small dose of morphine and adrenalin were administered.

The larynx was examined by direct vision and a small bronchoscope passed to where its point could be felt at the sternal notch. This was passed, to avoid cutting off all respiration while performing tracheotomy, for, in these extreme cases, tracheal compression with the neck extended over the end of the table will cut off all respiration. Therefore, I had intended to perform tracheotomy and tracheoscopy and the small bronchoscopic tube was passed for the double purpose of giving air and at the same time acting as a guide and facilitating rapid tracheotomy.

An incision was made in the sternal notch and the trachea rapidly opened. As soon as the tracheal rings were incised, Dr. Gover withdrew the small bronchoscope and a 7 mm. tracheoscope was inserted into the tracheal wound. There was considerable gush of pus from the wound as the tracheoscope entered; this was wiped away, the instrument passed downwards into the trachea, and the head of the tube was plainly visible pointing towards the right bronchus which is was partially obstructing, while the body and end of the tube were well down into the left main bronchus.

The tube was grasped with the forceps and removed with ease, the tracheoscope being removed at the same time. A tracheal canula was inserted into the trachea and allowed to remain for two days after which time it was removed and intubation performed. The child became much worse and with increasing pneumonia succumbed one week later.

24 West Fifty-ninth Street.

REPORT OF A CASE OF CHRONIC FRONTAL SINUSITIS, SPHENOIDITIS, INFLUENZAL MENINGITIS, DEATH, NECROPSY.*

Dr. C. Johnstone Imperatori, New York.

L. B., aged twenty-six years, a brass worker, was first seen by the writer some five years ago. At that time he was complaining, for the two weeks past of severe headache, that was localized to the area of both frontal sinuses.

His family history was, that one brother had died from tuberculosis and that probably his mother, was also tubercular. His past history was interesting in that as long as he could remember he complained of ozena. Physical examination of his chest revealed a quiescent lesion at his left apex. He had an atrophic rhinitis, with pus coming from the region of the left hiatus, and some from the left sphenoid. A skiagraph showed on inflammatory condition of both frontals, more marked on the left. The left sphenoid showed some thickening of the mucous membrane, while both antrums and ethmoids were hazy. Trans-illumination was not satisfactory. Intra-nasal drainage of the left frontal was attempted and for a time was successful. The left antrum was explored, with negative findings. However, he did not seem to get better and it was decided to do a Killian frontal sinus operation on him. This was done and the ethmoids exenterated. The sphenoidal ostium was enlarged.

He made a prompt recovery and remained well for four years, excepting that he still had his ozena. One year ago he again came under observation, with the history of severe headaches for the past week. On examination of the nose, a small sinus was found leading up through the cicatrical tissue in the direction of the left frontal sinus. Some pus could be seen coming from this place, and from the sphenoidal opening. The anterior wall of the sphenoidal sinus was removed and the fistulous tract enlarged by dilatation with sounds. He recovered within a week and remained well until March, 1915, about one year following his previous attack. His complaint now was severe headaches accompanied by nausea and vomiting and some dizziness. He was able to work, but after ten days of trying various

*Presented before the Section on Laryngology and Rhinology of the New York Academy of Medicine, April 22, 1915.

Note: Evidence of a tuberculous meningitis was looked for, but no tubercles were found.

remedies, the writer saw him. This was about March 12, 1915. The same condition presented as detailed about the attack the previous year. The fistulous tract was dilated and some pus came out. For about one week he seemed to improve, the only symptom being pain over the left frontal. On March 20, all his symptoms returned with marked severity and he was sent to the Red Cross Hospital. The left frontal sinus was again opened externally and found to contain a mass of granulations and fibrous tissue, with tracts of pus running through it. The sphenoidal cavity was curetted and a considerable amount of granulations removed.

Three days following the operation, there was some diplopia and for the following two days his cerebration was rather slower than normal. He was drowsy but could be roused. There were no other signs. His pupils reacted to light and accommodation, normally. The eye grounds were negative. Blood pressure, systolic, was 112, diastolic 70. Pulse averaged about 80; the temperature around 101.

On March 26, at 4 p. m., six days after the operation, after having had a very comfortable day and while eating his supper, he became totally aphasic, with some paralysis of the right arm and a partial paralysis of the right side of the face. Within an hour he became comatose. Examination at this time showed a reduction of reflexes on his right side. The pulse had dropped to 64, temperature 99. There was no Kernig, no Brudinsky, no Babinski, etc.

Taking the above symptoms into consideration it was thought possible, that a frontal lobe abscess was present that had extended over to the motor cortical zone. It was decided to do an exploratory operation, with the hope of finding the cause of the above noted symptoms. At this time, 8 p. m., his pulse was 64, blood pressure 110. His spinal pressure was 24 (Strauss instrument). The spinal fluid showed some excess of globulins, ten cells to the field, and a slight reduction of Fehlings solution.

A subtemporal decompressive operation was done on the left side—but with negative findings. The posterior wall of the left frontal sinus was removed and the brain explored from this point, with negative results. The brain did not seem to be under any tension; there was no pulsation, no injection of the dural vessels and very little fluid came out on incising the dura. The patient recovered from the immediate effects of the operation, but remained in a semi-comatose state from March 26, the day of beginning coma and also of operation, until Monday, three days later. On Monday he seemed better and by evening he appeared to

be very much better. He had a return of function of the arm muscles, his facial paralysis had disappeared and he was not aphasic; but cerebration was slow. He remained in this way for about four days, when he lapsed into a typhoid state. Each day following the day when he became comatose, about 20 to 30 cc. of spinal fluid was withdrawn. The pressure, during unconsciousness was around 37, at other times it averaged about 20. The day after he became comatose, the chemical tests showed no reduction of Fehlings; globulins in excess, ten to twelve cells per field. Cultures were negative. Two days before death a culture was obtained on blood serum and the organism identified as the influenza bacillus. It was not until four days after he became unconscious and one day after again becoming conscious that he developed any neurological signs pointing to meningitis. Of course, from the excess of spinal fluid and headaches we knew, that he had at this time a serous meningitis.

On March 30 he developed a Kernig, cervical opisthotonus and gradually lapsed into a typhoid state. He died April 3rd. The necropsy by Dr. Pease is as follows:

AUTOPSY REPORT.

Externally there is a wound over the left frontal sinus, which appears healthy. Above and in front of the left ear is a second wound, which was the result of a decompression operation. From this wound a considerable amount of pus was expressed. Slightly to the left of the median line high on the forehead is an old scar.

Owing to adhesions between the membranes and the cranium the skull cap was removed with difficulty. The dura mater was at once seen to be much thickened and injected. Owing to firm adhesions and the thickening of the dura mater the under surface of the brain was separated from the base of the skull with difficulty. That portion of the brain lying between the optic tract and the pituitary body in front and the spinal cord posteriorly is covered with a heavy straw colored exudate, which is adherent to the brain substance. This exudate is limited latterly by the cranial nerves, and covers the under surface of the crus, the pons Varolii, the pyramid and the olive. The hemispheres (cerebral) on all their surfaces show a thin exudate, especially along the lines of the vessels. The blood vessels are engorged and a few fine petecchial haemorrhages are noted. The inflammatory process seems to be especially well marked in the region of the sphenoid and ethmoid bone there is an area of scess or tumor formation. On the right side along the cavernous sinus in the region of the sphenoidal and ethmoidal bone there is an area of marked injection, but no softening of the bone or evidence of abscess could be made out. Around the pituitary body the evidence of inflammation was so marked as to call for an especially careful examination of this region, but the bone appeared healthy.

Cross-sections of the brain show no tumor or abscess formation. The ventricles contain an excess of fluid and are slightly dilated. The vessels in the substance of the brain are prominent.

The middle and internal ear are healthy.

The right frontal sinus is small and contains some mucopurulent material.

Sections of the brain at the point where a probe was passed back into the frontal lobe show nothing that is abnormal.

Diagnosis: Influenzal meningitis.

Bacteriological examination of the spinal fluid shows an excessive number of polynuclear pus cells, a positive globulin test and a failure to reduce copper solutions. Cultures show a small bacillus, morphologically and culturally resembling the influenza bacillus. This same organism was later recovered from the exudate on the surface of the brain.

Diagnosis: Influenzal meningitis.

The reasons for presenting this case before the section are the following:

1. The possibility of the extension of the infection, from the nose, through the bone in the region of the right spheno-ethmoidal angle.

2. The transient aphasia and partial paralysis, coupled with the interesting autopsy findings: area of meningitis around the Island of Reil and over the upper part of the motor cortical zone.

3. The recovery of the influenza bacillus from the spinal fluid.

4. The comparative low leucocyte count, which is characteristic of influenza, averaged as a total count around 12,000, and a polynuclear of 70.

5. It was also interesting to note, that the tracts made by the exploratory probe, were not developed into new paths of infection.

6. The reliability of the chemical tests in the early diagnosis of meningitis—long before bacteriological tests are of avail and particularly, where there is a clear fluid and a low cell count, and long before any neurological findings.

245 West 102nd Street.

Surgical Treatment of Acute Serous Meningitis. J. L. ABECHUCO, *Rev. de med. y cir. pract.*, June 14, 1915.

The author points out that the indication is to diminish directly the cerebro-spinal pressure and trephining, followed by evacuation of fluid from the pia mater or by ventricular pressure, meets this indication. The serous form of meningitis is distinguished by not showing much fever or by the absence of fever and is rarely met with in adult life. Seventy-five per cent of the cases occur between the ages of ten and twenty-five. Examination of the cerebro-spinal fluid shows little albumin and sugar and very few cellular elements or bacteria. ED.

HYSTERICAL MUTISM CAUSED BY SHELL EXPLOSION.*

DR. MARCEL NATIER, Paris, France.

The following case happened with one of the French soldiers on the firing line:

R., 36 years of age, a farmer by occupation, was mobilized in one of the territorial infantry regiments on August 2, 1914.

Family History: His father died six years ago at the age of 80. He was a hard drinker all his life. His mother, 70 years old, is a petite woman and very sober. There was no consanguinity between the parents and neither of them ever had any defect of speech. A sister, born six years after the birth of the patient, died when 11 years old from pulmonary tuberculosis.

Personal History: The patient was born in the country and always lived there. In his early years he was sickly and suffered from colic and diarrhea. Between the ages of 6 and 13 he attended school; because of his gastro-intestinal illness he was often behind in his class. At times he was obliged to remain in bed for a week. After leaving school at 13 he worked in the fields until he was 21 years old. He then spent a year in military service. Except for occasional recurrences of his intestinal condition he enjoyed good health while with his regiment. At the completion of his military service he returned to the farm. At the age of 30 he married a vigorous, healthy girl, and three children, all in good health, were born of this union. He never had any venereal disease and according to the patient's statement he never had had any promiscuous sexual relations whatever.

As far back as he could remember he was always very nervous. He was also subject to headaches which would recur every fortnight and persist for two or three days. They would come on while at work just as well as while at home and would be preceded by a sensation of throbbing in the front of the head between the eyes, accompanied by vertigo and vomiting. On such occasions he was compelled to lie down and would emerge from the crisis greatly fatigued. He never had any defect of speech.

His sleep was mediocre and would frequently be disturbed by dreams and nightmares. These would, in fact, be so vivid that the nervous excitement would throw him out of bed.

*Read before the meeting of the thirty-seventh annual congress of the American Laryngological Association, June 1, 2, 3, 1915, at Niagara Falls, Canada.

The patient never drank any strong alcohol. He used to drink a cup of *cafe noir* in the morning as a bracer and during the day two or three liters of cider. He was always sober, however. During the past two or three years he has replaced the cider by an equal quantity of milk. Milk is now his usual drink.

In infancy the patient had frequent attacks of coryza and has always had a tendency to colds and sore throat.

After being mobilized the patient was sent to the firing line in Belgium. The first battle in which he was engaged was near Bapaume, on September 26, 1914, and he remained on the firing line until October 3. On that day a shell exploded immediately near him on his right and the force of the explosion hurled him, together with the earth ripped up, a distance of five or six meters to the left. On the way to the field hospital he was exposed to a veritable hail of shells. At this time he was still able to talk to his Colonel, but later it was found that he had lost the power of speech and had suffered a right hemiplegia.

At Guingamp, where he was transported, electrotherapy was employed to the right half of the body and the laryngeal region. At the end of a week he showed a slight degree of mobility in his right arm and thigh. But the results having been considered insufficient the patient was removed to the Salpêtrière in Paris.

Here a thorough examination showed the following:

Lower Limb: Foot adducted and internally rotated; the leg can be raised about 5 cm. above the plane of the bed; slight flexion of the leg on thigh; flexion of thigh on pelvis impossible because of pain and rigidity.

Muscular Force: The patient is able to hold his leg stiff and resist flexion. Complete abolition of foot movements. Owing to the absence of contracture at the ankle equinism and internal rotation easy to correct. Hip movement very limited and painful.

Tendinous Reflexes: (a) Patellar, slightly diminished ;(b) Achilles, partially abolished.

Cutaneous Reflexes: (a) Cutaneo-plantar, abolished on the right, normal on left; (b) cremasteric, abolished on both sides; (c) abdominal, normal on both sides.

Superficial Sensibility: (a) Tactile, (b) thermic, (c) pain; anesthesia of the leg; hypoesthesia of the thigh.

Deep Sensibility: Pain on pressure; same zones as in superficial sensibility.

Osseous Sensibility: Complete anesthesia of the bones in the foot and the right leg; hypoesthesia of the femur and of the pelvic bones.

Weber's Circles: Negative on thigh.

Sense of Localization: Nil.

Sense of Attitude: Completely abolished in the toes and the heel. Some atrophy of the muscles of the right thigh. Tactile, pain, thermic and osseous hyperesthesia of the right half of the pelvis.

Upper Limbs: Active and passive motion normal.

Sensibility: Except for hypoesthesia, normal. No trophic disturbances. Hyperesthesia of the right half of the face and head. Corneal reflex abolished on the right. Pupillary reaction normal to light and convergence. Anesthesia to pain, heat and tactile sense of the buccal mucosa and tongue. No pharyngeal reflex.

Tendinous Reflexes: (a) olecranon, normal; (b) radial and cubitopronator, slightly diminished.

Lumbar Puncture: Fluid clear; hypertension; no hyperalbumosis or lymphocytosis.

Psychic State: Patient very emotional and cries easily. He understands his surroundings perfectly well and also the questions asked him. He makes efforts to talk but these provoke violent contractions of all the facial muscles. No disturbances of memory.

Ophthalmological Examination: Negative.

In view of the above findings pointing to hysteria, I proposed *respiratory gymnastics*. These exercises were carried out and a complete cure attained by means of them.

It is only by a perfect understanding of the terrain on which the apparent disease is based that the true state of affairs can be recognized. The minutest details in the personal and family history must be gone into and interpreted properly. Applied to our soldier these principles leave the mark of their influence. His father's intemperance and his own neuropathic temperament have contributed to reduce his organic resistance. The suddenness and totality of his mutism are explained by the condition which caused them—the sudden, terrific shell explosion. The complete right hemiplegia that accompanied the mutism speaks in favor of the theory with which this kind of mutism is related, disorders analagous to those which occur in the speech center in aphasia. The analogy is not, however, absolute, for there are numerous cases of hysterical mutism without any motor or sensory disturbances on the right side or the disturbances may present the most diverse localizations.

Simulation was ruled out by the conduct of the patient himself. His fervid desire to recover his speech was attested by his repeated efforts to talk and his real chagrin at his inability to do so. And it was further proved by his sincere joy when he was cured.

The uncertain duration of the affection which may last not only for weeks but for months and years is likely to make the prognosis gloomy which is otherwise favorable.

Laryngoscopic examination should never be neglected. It furnishes variable results. No trace of an apparent disorder may be found in the larynx. On the other hand, functional paralysis either of one or the other vocal cord may frequently be encountered. More rarely, the cords may be in abduction, or in adduction or in an intermediary position. In the case of our soldier at every effort to speak he closed his glottis hermetically by an energetic constriction which exaggerated every new effort.

These diverse and even contradictory symptoms come from motor inco-ordination of the larynx; they clearly exclude the blame on any one vocal cord for the complete loss of speech which characterizes hysterical mutism. It is due to a more general cause. Thus psychic influence has been invoked as the essential and necessary condition for the genesis of this particular affection. It is also necessary to bear in mind that the motor inco-ordination is not confined to the larynx but that it may affect the entire respiratory system.

The therapeutic procedures for hysterical mutism have been the most varied, and as with all hysterical patients what will act with one will not act with the other and vice versa. According to the point of view taken it may be said that the procedures adopted are of two kinds: the first, brusque and even violent, the second, soft and persuasive. The former may tend to increase the obstinacy and defiance of the patient. The latter consisting as it does of patience and gentleness appeals to the patient's reason and tends to convince him of the benignity of his condition.

Conclusions: Hysterical mutism occasioned by a vivid emotion (fright, chagrin, traumatism), sets in suddenly and rarely progressively.

The very nature of the affection supposes the existence of a predisposed soil, an organism in more or less unstable equilibrium.

Treatment by persuasion and patience is almost always crowned with success.

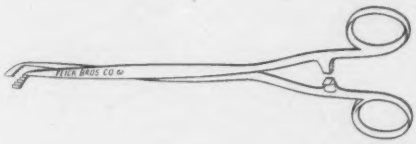
Motor inco-ordination, not only of the larynx, but of the whole respiratory system may well cause obstinate persistence of the hysterical mutism. This should be corrected by appropriate gymnastic exercises.

Rue de Bellechase.

AN IMPROVED TONSILLAR HAEMOSTAT.

Dr. J. A. Hagemann, Pittsburg, Pa.

When contemplating the great array of appliances which constitute the armamentariums of laryngologists, one is seized with trepidation at the thought of superadding another instrument to the list. To some, however, who have borne the disquietude of the uncomfortable moments which one experiences while arresting a formidable tonsillar hemorrhage, the herewith illustrated haemostat



may not prove uninteresting. Curved at the tip in such manner as to readily reach any portion of the tonsillar fossa, approaching the bleeding artery "broadside on," properly serrated to contuse, yet not cut the vessel, and having a lock which will sustain the instrument's grip, this haemostat has proven a source of gratification to the writer. It was made for him by Feick Brothers Company, of this city.

Highland Building.

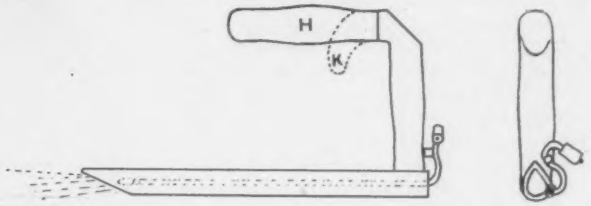
Treatment of Ozena by the Injection of Paraffin. N. R. Blegvad, *Ugeskr. f. Leger.*, Jan. 28, 1915.

Out of thirty patients, whom Blegvad has treated by this method he reports five cured or materially improved over a period of two or three years. The benefit derived is due to the modification of conditions in the mucosa and partly also from narrowing of the lumen, enabling the nose to be blown more effectually, and thus preventing accumulation of crusts. The mucosa is softened and rendered succulent by preliminary injection of water so that it takes up and holds more of the paraffin. The paraffin is injected beneath the mucosa on the inferior turbinate and septum. The outcome depends on the regenerative powers of the mucosa. Ed.

AN ANTERIOR COMMISSURE LARYNGOSCOPE.

By Dr. Chevalier Jackson, Pittsburg, Pa.

The laryngoscope shown in the illustration will be found to remove the last vestige of difficulty in the exposure of the anterior commissure of the larynx. It is intended to be used by the author's method at the side of the tongue, not over the dorsum. As this position approaches the larynx slightly sidewise, some experience is necessary in recognizing the landmarks; but facility is quickly acquired. The handle (H) is necessary for the sitting patient.



Though not in the way in the recumbent posture, many laryngologists will prefer to substitute the hook (K). This instrument does not replace the regular slide-speculum for the general run of work; but those who have difficulty in certain cases, in exposing the larynx, will find such exposure feasible in every case, even the most difficult. The heart-shaped lumen presses the tissues away from the visual line to the anterior commissure. The instrument also makes an excellent esophageal speculum.

Westinghouse Building.

Treatment of Hay Fever with Roentgen Rays. K. Schmidt, *Munch. med. Woch.*, No. 23, June 8, 1915.

Schmidt tried this treatment on two patients, giving each one-third the erythemal dose, according to Sabouraud-Noire. In both cases there was a complete disappearance of the sneezing after the second irradiation, or fourteen days after the beginning of treatment. Ed.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Regular meeting, April 22, 1915.

DR. HUBERT ARROWSMITH, CHAIRMAN.

Cancer of the Larynx, Complicated with Laryngocele. DR. HARMON SMITH.

Published in full in the present issue of THE LARYNGOSCOPE.

DISCUSSION.

DR. ARROWSMITH said that it was a most interesting and rather unaccountable condition. Five years ago he had himself seen a case with a cyst as large as a hickory nut which embarrassed the patient very much. This was evacuated and he did not see the patient again until four years later, when he reappeared with the cyst, filled up and very much larger than it was the first time. It was again opened and the man was urged to have it entirely removed, but as he had not returned to have it done presumably he was comfortable. It was rather strange that it should be so long in abeyance without giving any trouble.

DR. FREUDENTHAL said that he had never seen just such a case, but he had presented to the Society some years before a patient, a state senator, with a somewhat similar condition, whom he had seen before about fifteen years earlier. The patient would not have an operation or anything else done, and the mass grew and suffocated him one night. He was a comparatively young man.

Chronic Laryngeal Stenosis. DR. HUBERT ARROWSMITH.

DR. ARROWSMITH said that the patient came to his service January 1, 1913, with the history that he had been feeling rather indefinitely ill for a month. During the week previous to his admission he had suffered from increasing difficulty in breathing. The larynx was very oedematous and an immediate tracheotomy was performed. Examination of the urine showed that it was loaded with albumin and contained large granular casts. This condition of the urine persisted for several weeks, and the oedema showed no tendency to subside. The man was in the hospital from January until the middle of September, 1913. The laryngeal obstruction was not improved by the almost daily passage of Schroetter's dilators. The kidney condition gradually cleared up, and he left the hospital in September with the tracheotomy tube *in situ*. He came back in November and a Jackson laryngostomy tube was inserted, which remained until the following May. Then the subglottic condition was somewhat relieved, but the supraglottic swelling persisted. Several cauterizations were made with the hope of getting sufficient contraction to open up the larynx somewhat. The kidney trouble has not returned. The man left the hospital finally in May, 1914, and while he had improved to a certain extent he did not like to go without the tracheotomy tube. It was removed, how-

ever, in January, 1915, and he is getting along fairly well. Although the wound was not closed, neither Dr. Arrowsmith nor the patient felt like interfering with it. There was a reasonably good air space and the man talked fairly well, but any sudden oedema might prove dangerous.

DISCUSSION.

DR. COFFIN expressed his regret that he could offer no suggestion for relief. It was one of those cases where one could only act as Dr. Arrowsmith had done and feel the way.

DR. KERNAN spoke of a couple of cases he had seen, reported by Castleberry, of Chicago (*Jour. A. M. A.*), in connection with chronic infection of the sinuses of the nose. They were reported as chronic lymphoid inflammations, and were treated with vaccines with gratifying results. Under comparatively large doses of vaccine, the swelling disappeared rapidly from the larynx. He expressed the possibility that Dr. Arrowsmith's case might be of a similar nature.

DR. ARROWSMITH replied that he thought not.

DR. ARROWSMITH, replying to Dr. Kernan, said he did not think the case was of the same nature as those referred to.

DR. LYNAH asked if intubation had been tried. Intubation with a large tube might help the condition.

DR. ARROWSMITH replied that he had considered that and had had a tube made, but that the man could not tolerate it.

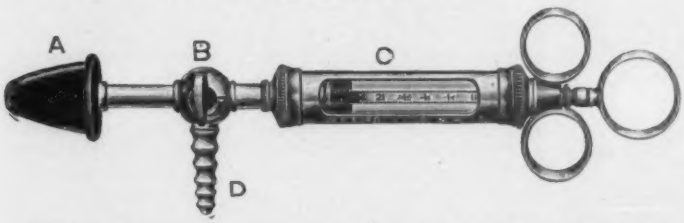
DR. LYNAH said that if the tube could be tolerated it would be an easy matter to close the tracheal fistula.

DR. ARROWSMITH responded that the case might be more tolerant now and that it might be worth while to try it again.

DR. LYNAH said that in some of his cases of chronic stenosis of the larynx with polypoid tissue supraglottic, the pressure of the large head of the intubation tube was not only beneficial, but would bring about permanent cure.

Demonstration of Suction Apparatus for Treating the Sinuses HARMON SMITH, M. D.

Suction Apparatus.



In the presentation of this instrument I wish to preface the description by stating that in cases of acute and sub-acute sinusitis it has been my practice to employ the negative pressure for the evacuation of the sinuses, followed by hot saline irrigation to evacuate the purulent matter drawn out into the nasal cavity. I continue the suction, followed by the irrigation, until there is no more evidence of pus in the washings. After this

I insert the nose-piece of the instrument and connect the exit with the Bier's suction pump. The patient is then instructed to say "k," "k," "k," which act forces the palate against the post-pharyngeal wall and with the opposite nostril closed one is able to obtain a vacuum in both nasal chambers and in the sinuses emptying into the nasal fossae. When a complete vacuum, or, at least, a sufficient vacuum, is obtained, the stop-cock to the Bier's suction is shut off, the stop-cock to the medicine chamber is turned on, and by means of a needle valve at the distal extremity of the chamber, a bubble of air is admitted, permitting the liquid to be drawn into the nostril to fill the vacuum spaces produced by the suction. I have obtained the greatest success in the employment of the lactic acid solution or the bacillus Bulgaris, and while I do not feel that this is the only medication by which beneficial results may be obtained, I, nevertheless, am prepared to state that the sinus cases in which I have employed this preparation have recovered in less time than from the use of any other medicaments, such as argyrol, etc. I do not believe that the medication is the most important factor of this form of treatment, as the hyperaemia induced by the suction is unquestionably of great value.

Demonstration of an Apparatus for Applying Either a Negative or Positive Pressure to the Nose and Its Accessory Cavities. DR. LEWIS H. COFFIN.

By way of demonstrating his instrument Doctor Coffin treated two (2) patients. The negative pressure having been applied to the nose, by the turn of a switch he is able to immediately produce a positive pressure in the nose. This pressure current having passed through a nebulizing bottle containing oil, an oil nebula is at the same time carried into the nose. This nebula can be medicated in various ways. Dr. Coffin's claim is that, as nature abhors a vacuum, some of this medicated nebula must find its way into the various accessory cavities of the nose. The process may be repeated as often as one chooses. Doctor Coffin said he had used oil containing various amounts of iodin and also an oil loaded with the Bulgarian Bacillus.

DISCUSSION.

DR. ARROWSMITH said that the methods seemed to promise very valuable adjuncts to our equipment.

DR. SMITH said that it seemed to him that a certain value of Dr. Coffin's instrument would be lost, as the mucous membranes would not be entirely cleared of the pus and mucous brought to the surface by suction and to get the full value of the medicated spray it would be necessary to irrigate the nasal chambers before applying the medication. In the employment of his own instrument he first used the suction and then irrigation, until all of the mucous surfaces were entirely cleansed, then when the fluid rushed back to fill the vacuum it came in contact with a perfectly clean area. In his experience some patients were not able to hold a vacuum sufficiently long for all the fluid to gain entrance and that in such cases, spraying with an oil spray would have no more effect than ordinary spraying without the employment of the suction apparatus. He did not understand from Dr. Coffin's remark whether he claimed the vacuum was held for the entire time the suction was employed or not.

DR. COFFIN replied that most certainly it was held. One only needed to look at the index to judge.

DR. SMITH rejoined that if that was Dr. Coffin's experience, he had certainly been more successful than he had been himself, as his patients often relaxed before sufficient time had been given for the fluids to gain entrance.

DR. COFFIN said that they could not relax it with his instrument. He employed from twelve to seventeen pounds pressure.

DR. SMITH said that he had had unusual success in the treatment of his cases since using his apparatus and that the sinus cases of the past winter had yielded more readily than any others in the course of his experience. Whether this was due to the fact that the cases presented a milder form of infection or whether the result was due to the method of medication, he was unable to state, but that many of them had been of the acute and sub-acute variety, some of which had extended over a period of a year and a half. From observation he concluded that there was considerable benefit from employing the suction and the medication in the manner in which he had described.

DR. HERZIG asked if the patients complained of pain in their ears when the suction apparatus was used, as it had been the experience of the speaker to have some patients complain of pain.

DR. COFFIN said that once in a while patients would complain of the ears, especially if they happened to swallow during the time of compression, but the patient shown to-night, who had never been treated before, complained only of her eye. That was because she had been operated upon for an ethmoid condition, which left the orbital contents more exposed to the pressure.

Dr. Coffin was asked if he had any trouble in having the alae nasi compress.

Dr. Coffin replied that it could not collapse on account of the shape and size of the nasal tips.

Report of a Case of Chronic Frontal Sinusitis, Sphenoiditis, Influenzal Meningitis; Death; Necropsy. DR. C. JOHNSTONE IMPERATORI.

Published in full in the present issue of THE LARYNGOSCOPE.

DISCUSSION.

DR. KOPETSKY said that he had had the pleasure of seeing this case before and could confirm what Dr. Imperatori had said about it. If he understood Dr. Imperatori correctly, the diagnosis of serous meningitis had been made. It was a purulent meningitis in one stage,—the autopsy findings bore that out. The man presented no evidence of meningitis, purely the findings from the fluid, the chemical readings. The localization of the meningitis deposits at one particular area in the brain, as the motor area, or around the Island of Reil; he had seen rhinologic and otologic cases that simulated an abscess, but the transient nature of the involvement was pathognomonic rather of meningitis than of abscess. He complimented Dr. Imperatori upon the thoroughness with which he had worked up the details of the case presented, and expressed the belief that we would in future hear more of the chemical examinations of the fluids in the determination of the diagnosis; it bears out that in these border-line

cases the chemical diagnosis of the fluid gives an index as to what is going on in the central nervous system long before the bacteriological or neurological findings give the key to the situation.

DR. GUTTMAN said that he had not followed all the details of the case, but that if he understood the speaker rightly, it was claimed that it was a case of meningitis possibly due to the nose infection. Dr. Guttman said that while he did not doubt that the ultimate outcome was meningitis, he could not explain to himself how that could be harmonized with the findings of the pulse and some other symptoms that pointed very plainly to an abscess of the temporal lobe. That meningitis alone could produce these symptoms, he had never before heard. It was quite interesting to hear that the chemical tests showed that it was meningitis; he was not chemist enough to understand that. It could not, however, explain the aphasia and the low pulse—64. He hoped that Dr. Imperatori would explain these symptoms.

DR. IMPERATORI: Regarding the remarks of the Doctor, who said he considers this a case of abscess of the tempro-sphenoidal lobe, it would seem that he did not give his attention to the fairly complete autopsy report, regarding the examination of the brain.

Suffice to say, there was no abscess.

The condition of aphasia, etc., was caused by a collateral edema, extending into the brain substance from the areas of meningitis noted at autopsy.

DR. KOPETSKY said that the literature contains many reports on cases of meningo-encephalitis which gave similar symptoms, and yet no abscesses were found.

Two Cases of Foreign Body in the Bronchi Complicated by General Emphysema. DR. HENRY L. LYNAH.

Published in the present issue of THE LARYNGOSCOPE.

Foreign Body in the Left Bronchus. DR. HENRY L. LYNAH.

Published in the present issue of THE LARYNGOSCOPE.

DISCUSSION.

DR. HERZIG asked if a case like the last one, where pneumonia set in, it was advisable to keep the tube in. Some years ago he had had a case in which a broncho-pneumonia set up the second day, after intubation, and the question arose whether it was advisable to leave the tube in on account of the pulmonary condition or remove it. The latter course was pursued.

DR. LYNAH, replying to Dr. Herzig's inquiry, said that in all cases with broncho-pneumonia the tube was allowed to remain in longer than in those cases without pulmonary involvement. He had stated in his report of the case that, on account of the child having broncho-pneumonia, the tube had been allowed to remain until April 3d, a period of ten days. The tubes were usually allowed to remain in the larynx one week or longer, for it was not desirable to tire out the patient by constantly removing and replacing the tube.

DR. ARROWSMITH asked if the case of foreign bodies in the bronchii of both lungs was not unique. It was the only case of the kind reported that he knew of.

DR. MACKENTY said that about eight weeks ago a woman was brought to the clinic who had swallowed an enormous piece of meat and had considerable emphysema of the neck. The foreign body was removed, but the emphysema persisted for a week, and then faded away. He asked Dr. Lynah about removing the tracheotomy tube and replacing it with an intubation tube. The advantage of leaving the tracheotomy tube in place is that by the use of suction the edema can be relieved. A year ago he had under his care a young child, and could not get the intubation tube in; he accordingly did a tracheotomy. If that had not been done the child would have died from the excess of secretion. As it was, the secretion was easily pumped out and the child was saved from drowning in its own secretion. (It had edema of the lungs.)

Replying to Dr. MacKenty's query about the tracheotomy canula, he said that it was taken out on account of the enormous amount of infection around the wound. There was no doubt that what Dr. MacKenty had said about suction was correct. He had used suction himself, but it did not always relieve the broncho-pneumonia cases. It would relieve, however, the tracheo-bronchial diphtheria cases by sucking out pieces of the membrane which were causing mechanical obstruction to respiration.

Case of Cyst at Base of Tongue. DR. DUNCAN MACPHERSON.

J. W., aged 47, has been under observation and treatment for atrophic rhinitis for the past two and one-half years. In the examination of the larynx, two weeks ago, a small tumor was noticed, the size of a hazel nut, in the space between the epiglottis and the base of the tongue, to the left of the median line. The patient has not complained of any symptoms due to the presence of the tumor. From observation I would judge it to be a cyst. As these cysts often grow to enormous size and ultimately occasion embarrassed respiration it warrants consideration in the classification of laryngeal tumors.

Regular Meeting, May 25, 1915.

DISCUSSION.

Malignant Growth of Tonsil. DR. JOHN GUTTMAN.

The patient was 60 years of age and first came under observation two weeks ago. She first noticed the trouble in her throat five or six months ago, and had been treated for pharyngitis and tonsillitis. She came to Dr. Guttman for treatment, complaining of pain and soreness,—pain on swallowing, voice husky, and difficulty in speaking. Examination revealed what was evidently a malignant tumor, but the patient would not allow the removal of a specimen for microscopic examination. The clinical picture was quite marked, but has not yet been verified by microscopical examination.

DR. DOUGHERTY said that the patient had been referred to him a month before to see what he thought of the condition, and he had then pronounced it a malignant tumor, and suggested that she go to the hospital for observation and confirmation of the diagnosis. He had not taken a section, as he did not believe in that procedure and thought that taking

a section from a growth of the tonsil or mucous membrane anywhere is like setting a match to what might prove a dangerous conflagration. The only way to do that was to have the patient under observation, and be ready for immediate operation and removal of the whole growth should it be found necessary. The patient refused to go to the hospital, however, and disappeared from observation, and he had not seen her since. The growth had materially increased in size.

DR. GUTTMAN said that he had wondered why the patient refused to have a section taken, and now understood it, for she had said that some doctor had told her not to have it done.

DR. DOUGHERTY said he thought she owed him a vote of thanks for his advice.

Paralysis of the Recurrent Nerve, Due to Mitral Stenosis. DR. JOHN GUTTMAN.

The patient was 26 years of age, and seven years before had suffered with rheumatism. Three years ago she was told that she had some trouble with her heart. She was referred to Dr. Guttman a few weeks previously on account of aphonia and difficulty in breathing. Laryngoscopic examination showed the vocal cord to be immovable in a cadaveric position. At first it was thought to be due to aneurysm, being on the left side. Examination of the pulses showed a marked difference in the two radical pulses. Wassermann test was made and reported to be negative. Then she was referred to Dr. Held and Dr. Neuhof for the examination of her heart. Dr. Held writes: "Your patient has the physical signs of mitral stenosis. Fluoroscopically the left auricle and pulmonalis show considerable dilatations, which is frequently an accompaniment of mitral stenosis. This is more likely responsible for the pressure on the recurrent nerve."

Dr. Neuhof after describing the results of the physical examination writes as follows: "The orthodiascopic tracing shows a very marked enlargement of the outline of the pulmonary artery, which to some extent apparently encroaches upon the normal outline of the aortal curve. The left ventricular curve is further from the median line than normal; there is some left ventricular enlargement."

The first case of this kind was reported in 1897 by Ortner, of Neisser's Clinic in Vienna, and up to 1911 twenty-seven cases were reported. Of tnese, eleven were autopsied. The autopsy findings varied according to the different authors.

This case is interesting in that it shows a difference in the radila pulses which is due to pressure, possibly, on the subclavian artery.

Tracings of the pulsations were presented for inspection.

DISCUSSION.

DR. S. NEUHOF said that Dr. Guttman had referred to the various possible causes for paralysis of the recurrent laryngeal nerve in cases of mitral stenosis. In Dr. Neuhof's opinion, though all those mentioned were possible factors, the main cause of the pressure paralysis was either an enlarged pulmonary artery—a fact which had been verified in several autopsies—or an enlarged left auricle jammed, so to speak, between the pulmonary artery and the arch of the aorta. A unique feature in this case was the hitherto undescribed difference in the radial arteries, the left being

much smaller than the right; this difference amounted to 30 mm. in the systolic brachial pressures.

There was definite evidence of mitral stenosis, a presystolic thrill was heard and felt at the apex. Over the pulmonary area, there was a systolic murmur and a marked accentuation of the second sound; the closure of the pulmonary valves was even noticeable on palpation over the pulmonic area.

The fluoroscopic examination by means of the orthodiascope revealed a markedly dilated pulmonary artery; by pressure against the recurrent laryngeal nerve and against the aorta itself, it produced the laryngeal paralysis and diminution of the blood supply to the left upper extremity.

Plastic Operation for Closure of Naso-Pharynx. Dr. H. H. Forbes.

The patient was 21 years of age, and up to the age of 12 was apparently a normal child. Then he had a bleeding from the nose, for which he was treated by the village practitioner in Italy, where he was born. He came to this country at the age of 14. On presenting himself at the P. G. Hospital it was found that he had complete atresia of the naso-pharynx. (Pictures presented showing the various stages of the operation). Before the operation it was only possible to pass a probe through the center below where the normal uvula should have been. A large amount of adenoid tissue was removed through the nose with the ordinary biting forceps. At the suggestion of Dr. McPherson, who saw the case, instead of a very complicated plastic operation, a curved instrument was pased through the nostril, and this was cut own upon from the mouth. This was easily done, occupying only five or ten minutes. Then through the two openings were threaded two catheters. The point made was in doing previous operations, as soon as the catheter was passed inside a second operation was performed, and in this case the catheters were allowed to stay in for two weeks, allowing possible epitheliation to occur, on the idea of the old seton used many years ago. After two weeks, with the aid of cocain, it was possible to cut across in intervening tissue, and the patient now has the naso-pharynx of a child of ten or twelve years of age, with a very pretty uvula hanging there. The result seemed to be very satisfactory, although it was only a short time since the operation had been performed,—about nine weeks.

Another interesting point was that it had been impossible to find a causative factor for the contraction. A Wassermann was taken, and salvarsan was given, followed by a second Wassermann test, but all had proved negative. A piece of tissue had been examined, and a culture made from blood smears, but all had proved negative. Scleroma had been considered, but the pathologist had been unable to say what it was, other than inflammatory tissue of the pharynx.

For nine years the patient had been unable to blow his nose, and now he can do that, and the character of his voice has been entirely changed.

DISCUSSION.

Dr. Arrowsmith said that he had seen two or three similar cases, which could only be attributed to scarlet fever, and this might be a case of that kind. He congratulated Dr. Forbes on the excellent results which had been obtained.

DR. HARMON SMITH said that some years ago he had seen a case of atresia in a girl 5 years of age, the result of the removal of adenoids. Cicatricial adhesions between the soft palate and post-pharyngeal wall had formed, so that only a probe could be introduced into the naso-pharynx. In this instance he had liberated the palate from the pharyngeal wall and had held the same apart by introducing two catheters, one through each nostril, which were held to the outer angle of the wound by the junction of their two ends at the outer angle of the mouth. These were kept in place for a period of two months and at frequent intervals were moved backwards and forwards so that the scar tissue would not bind the catheters, for a period of two years, and was presented to the Section at about the end of this period. There was a perfect result and ample space in the naso-pharynx.

He had had two other cases, one of which had been materially benefited by passing an obturator behind the palate over a period of several years. This also was the result of an attempt at the removal of adenoids by an inexperienced operator.

Another was in a child of specific parentage, in which the palate had been ruptured by the employment of the Brandigee forceps. The parts of the palate adhered laterally to the median rent, and the attempts at correction were only in a measure successful.

Dr. Smith said that he mentioned these traumatic cases to show that not all cases of atresia were due to infection or syphilis.

DR. MACKENTY said that he had six cases on which he did his own plastic operation for the relief of naso-pharyngeal atresia. In his opinion the plastic operation is far superior to the older methods (as shown in the exhibited case) for the reason that the operation is completed in one sitting, no irksome tubes or wires are worn for weeks by the patient, and the results are better. Leaving catheters in for two weeks could not possibly produce dermatization of the angles. Two months would be more sensible. It is a question in his mind if this theory of dermatization is not all wrong, and in his opinion it does not occur in any given time by the method described. The plastic method is not difficult. It is time to leave the old methods where they belong, as interesting stages in the development, and as historically interesting, but no more.

DR. DOUGHERTY said that he had operated upon two cases of atresia in which instead of using the catheter he had, at the suggestion of Dr. Dawbarn, employed cargile membrane as a posterior flap bringing up the stitches, as was done in Dr. MacKenty's operation. Both cases were fairly successful.

External Nasal Deformity (Broad Nose). DR. H. H. FORBES.

DR. FORBES said that he had brought this patient in place of the one he had intended to have come, as he wished some suggestions in regard to the operation. This is a trauma not more than two years old. The nasal bones had been separated at time of trauma and there was a callus The question of internal or the external operation had come up.

DISCUSSION.

DR. MACKENTY said that in his opinion the case operated upon should be done by the internal method, removing the redundant bone with chisel and rasp. No breaking operation was indicated.

DR. CARTER said that he had seen the case and had also seen a number of others very similar to this one. They usually result, as in this instance, from trauma, and in traumatic conditions of the nose the bones nearly always have a tendency to separate. In three or four instances he had removed a wedge-shaped piece (the base of the wedge being upward) from the upper portion of the septum. An intra-nasal chisel is the proper instrument to use. After the tissue had been removed, the nasal bones may be mobilized by means of the Adams forceps, and brought together and held in position by means of a copper plate lined with absorbent cotton. The work is all done intra-nasally.

DR. HAYS said that he had operated on two similar cases of deformity, and in both instances did the external operation, making a small incision with a bone knife down the center of nose and separating the periosteum. After having done this a small chisel was inserted at the outer edge of the nasal bone, which was fractured, as high as possible, and then through the small opening where the two nasal bones come together he drove a chisel into the septum, making a wedge. He thought the external operation was the only one that would succeed in this case. In the two cases which he had operated upon the nasal bones came together very easily.

Demonstration of the Technique of Suspension Laryngoscopy. DR. ROBERT C. LYNCH.

To be published in a subsequent issue of THE LARYNGOSCOPE.

DISCUSSION.

DR. LYNAH said that he had arrived late, and had expected to be a good listener rather than a speaker. The technique which Dr. Lynch had demonstrated was of the greatest value, as well as the additions to his armamentarium, for all of us meet with difficult cases in which the application of the technique laid down by Dr. Lynch would be of the greatest assistance. He said that he was familiar with the apparatus of Killian, as well as the bivalve spatula. He told of two instances in which the larynx was so deep that the spatulas of the Killian model were not long enough to enable him to see the cords, even with the epiglottis-holder. The long spatula devised by Dr. Lynch would enable one to see much further. The high table was also very essential to those who were doing suspension work, for the usual standard table which we are accustomed to use in the hospital for other operations is not of sufficient height to enable the operator to sit in a comfortable position and perform satisfactory operations.

DR. GUTTMAN said that so far as he knew, Killian never claimed to be able to see the anterior commissure with his instrument. If Dr. Lynch could bring this about with his instrument it was a great achievement.

DR. YANKAUER said that he had come to receive instruction and felt that he had learned a great deal. The work is so new that we have not yet reached the end of the improvements. Those shown by Dr. Lynch to-night are along lines that will be appreciated by all who have met with some of the disadvantages of the instruments now in use. The necessity for a longer horizontal motion than that possessed by the original Killian apparatus, had been felt by him, but he had generally managed to overcome that by taking care that the patient did not slip up on the table.

Dr. Yankauer then asked Dr. Lynch whether the portion of the table-top which projected did not interfere with the shoulder and prevent the patient from lying flat on the table. The instrument which Dr. Lynch had shown as his perfected instrument seemed to possess some very decided advantages and he intended to get one and try it.

DR. IMPERATORI asked whether the majority of the cases were examined under cocain or general anesthesia. How about pressure on the cricoid? How about cases where there is much infiltration? Regarding malignant or tubercular cases? Does the Doctor consider them easy to suspend or not?

DR. ROSS H. SKILLERN said that he had come all the way from Philadelphia to hear Dr. Lynch and had certainly not been disappointed. He had often wondered how one could do these operations, but it was easy now to see how they could be done with the enormous amount of space which Dr. Lynch gets as compared with Killian's instrument. Another important advantage was the wings on the side. The latest model of spatula from the other side has these two movable wings on it. He had been fortunate enough to get one, but found that they are not necessary at all, as Dr. Lynch had said. The fixed wings are what is needed, for the tongue comes down and it is not necessary to lift the wings in a straight plane. All we need is the groove in there. As far as the spatula was concerned, he had had no experience with it, but had used Killian's retractor or elevator. That you can put in afterward, and lift up, and it has been very satisfactory.

Instead of Dr. Lynch's table, he had been using Killian's table with the head-piece, which can be tipped, and so lowered or raised, and the whole table can be thrown into different planes. He was also accustomed to put the patient in a little different position. The patient was held under the back of the head with the gag in position, and steadied in the median line with the right hand, the assistant controlling the other gag and the lamp. Then the instrument is hung up, and the operator sits down on the stool, so that he is sitting up straight with his eyes on a direct line with the patient's larynx.

DR. LYNCH, replying to Dr. Yankauer, said that the platform had not gotten in the way many times. On one or two occasions it had done so. The shoulder rests on it a little, but after the case is suspended it does not seem to make any difference in obtaining a view of the larynx. Occasionally it might have something to do with holding the head straight. That was the main trouble, to have the assistant hold the head in the proper position.

As far as anesthesia was concerned, it was much as you would select any other operation under local or general anesthesia. The main thing is to obtain relaxation. If you can secure relaxation under local anesthesia, well and good. If not, use the general anesthesia. Of course it is a question whether general anesthesia is the right thing with some forms of laryngeal obstruction. He believed that formed one of the contra-indications for general anesthesia, for if the patient must depend on his extraordinary muscles of respiration, the moment he is anesthetized they must stop. On the other hand, he had suspended children with almost complete obstruction of the larynx from papilloma and they had no dif-

ficulty. Under cocain he had demonstrated for an hour and twenty minutes. This was in a young negro. He had used suspension with both men and women, white and colored, under cocain, and in many cases it was as satisfactory as under general anesthesia. In the cocain cases, where there is any work to be done, he usually gives scopolamin and morphine beforehand, and then cocainizes the uvula and posterior pharyngeal wall and drops a few drops in the larynx. A 25 per cent solution of cocain in alcohol, gives a deeper anesthesia than 10 per cent. At the same time, with a 25 per cent solution you cannot keep the patient from crawling, if that term might be used. The young negro patient who had been referred to had a very flexible neck and ideal teeth. He was given morphin and scopolamin beforehand, and was not frightened by the procedure. We took all the time that was necessary, and when we got him into the position to make any pressure he simply raised upon his back and crawled up on the table. He was then put back on the table and strapped down and held there. It was explained to him that this was not to chastise him but was necessary to help him out and keep him from taking ether, so he was persuaded. It was very easy to see the anterior commissure.

Replying to the other question, Dr. Lynch said that he did use pressure on the thyroid cartilage sometimes in order to get a better view of the anterior commissure. Occasionally he was not able to see the anterior commissure. In most instances he was successful in doing this, but there are times when it is probably impossible to bring it into view. He made an attempt to get as good a view as possible, and sometimes made a little pressure to bring it into better view. On one occasion he had to steady the larynx from side to side in deep dissection of a malignant growth in the anterior commissure. There was a great deal of difficulty in keeping the larynx absolutely still, and he was compelled to hold the thyroid cartilages to keep them from moving from side to side. That little manipulation helped very nicely. Of course, the question of whether or not it is suitable at all for malignant growths will have to be determined. So far, he has removed six malignant growths from the interior of the larynx, and in all cases had been able to surround the malignant site by healthy tissue,—and there had been no recurrence. The oldest case operated upon will be three years in September. Dr. Lynch said that he had seen this patient just before leaving, and there had been no recurrence. The other cases were under a year, and in two cases there had been recurrence and they had had to submit to other laryngeal operations.

From any case of intrinsic malignancy, he would have some question whether operation was justifiable or not; and if there was any doubt of its not being thoroughly intrinsic he would not attempt it under suspension if the growth extended down under the crico-thyroid membrane. After the patients were suspended two of the cases that were prepared for removal by this method were taken down without being touched, for when the patient was suspended, the vocal cords spread, and the light put down, it was seen that the tumor extended down beneath the vocal cords to a greater extent than could be followed by the mirror or than had been suspected, and it was feared that the tumor had become extrinsic. Both cases were taken down and total laryngectomy was performed.

DR. IMPERATORI asked what type of cases Dr. Lynch considered difficult to suspend.

DR. LYNCH replied that the ones with which he had had most trouble were muscular men with long necks. The teeth did not seem to have much to do with the case. All children suspend very easily, but the adults give the difficulties. He had not yet suspended a thousand cases, and could not just limit the cases. One patient operated upon for a thyrotomy had a big scar and his larynx was bound down tight and seemed to be unusually long—in him suspension was so far impossible.

DR. EMIL MAYER asked Dr. Lynch who made his instruments.

DR. LYNCH replied: McDermott.

Oil-Ether Colonic Anesthesia in Surgery of the Upper Air Passages. DR. B. J. T. GWATHMEY (by invitation).

To be published in a subsequent issue of THE LARYNGOSCOPE.

DISCUSSION.

DR. CHARLES BASKERVILLE (by invitation) said that he could not add anything to the subject except to say that whereas ether boils at a temperature below the body temperature, it is interesting to know that we can combine ether with oil and place the solution in the body, where the temperature is above the boiling point of ether, and yet have the ether come out of the oil at a steady rate, easy to regulate. This had been determined in our experiments at the City College.

DR. ARROWSMITH said that in his experience of some 230 anesthesias by this method he had never seen a single adverse symptom, and it had been of the greatest possible comfort to him in work upon the air passages. There had been some failures to anesthetize, but that was due to lack of proper preparation of the patient. If the patient has been properly taken care of beforehand the anesthesia has always been satisfactory, and there had never been any untoward symptoms. Any laryngologist who had used this method could appreciate the relief and freedom from all interference by the anesthetist,—the entire sense of freedom with which the operator can go about his own work. Tuberculosis cases especially do very much better under colonic anesthesia than with respiratory anesthesia. Another important advantage was that the buccal and tracheal secretions are not nearly so profuse. The elaboration of the technique by Dr. Gwathmey was one of the greatest benefits that he has known for a great many years in this department.

DR. GWATHMEY, in closing the discussion, said that he had nothing to add except to emphasize what Dr. Arrowsmith had touched upon. He had been told by a physician who had a very large experience with tuberculous patients that if they were given ether by inhalation they usually died within six months and that as soon as he heard of this new method of giving ether it appealed to him, and that he approved of it heartily after having seen the results of the administration in one or two cases.